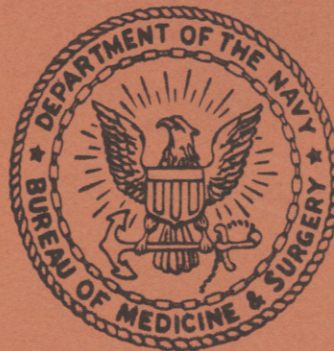


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Casualty Care Training Manual



for
Dental
Personnel

NAVMED P-5073 (Revised)
September 1965

FOREWORD

Successful recovery from a mass casualty situation depends, in a great part, upon the quality of assistance the medical officer receives from other members of the health team. In either combat or civil disaster there will be occasions when the available medical personnel are not sufficient in number to cope efficiently with casualties requiring treatment or to provide the immediate care which may be necessary to save the life of an accident victim.

The naval dental officer, with his considerable background in the biomedical sciences and his experience in battle dressing stations, is uniquely qualified to render emergency treatment. The naval dental technicians, by virtue of their continuous inservice training and special training in casualty care, are prepared to take an important place on medical teams in civil emergency and at the battle dressing station.

Through a training program organized along the lines suggested in this manual, naval dental officers and technicians will be prepared to support the Medical Department of the Navy in maintenance of a constant state of readiness to care for casualties in a national emergency or civil disaster.



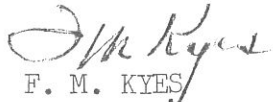
R. B. BROWN
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PREFACE

The U.S. Naval Dental Corps conducts a continuing program of training in casualty care procedures. Courses for dental officers are held quarterly at three major dental facilities. For dental technicians, basic casualty care is taught in the Dental Technician General, Class A course, and more advanced training is incorporated into the Dental Technician Advanced, Class C course.

This manual has been prepared as a guide for training dental officers and technicians in casualty care procedures. Provided in the form of lesson plan outlines, the manual incorporates the most recent knowledge, together with textual sources and appropriate training aids. The lesson plans may be modified according to the needs of the trainees.

Historically, naval dental personnel have served a vital function in staffing the battle dressing stations. More recently, it has been necessary to add training in treatment of mass casualties, such as may occur in a major civil disaster or following nuclear attack, when the Armed Forces medical personnel and civilian medical capability may be overwhelmed. It is also recognized that the lifesaving procedures outlined in this manual will serve a civic function in training naval dental personnel to assist in the treatment of accident victims.



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INTRODUCTION

Background

The experiences of World War II and the Korean War indicated that the dental officer's full potential was not being realized. Although dental officers performed capably and commendably in their professional duties, their special training and skills were of minor value in emergency or battle situations. Too many times the dental officer did tasks that lay personnel might have done equally as well, for although the dental officer possessed special knowledge he was hampered by the lack of practical training in emergency assistance. In this manner the total medical effort remained below the possible level of success.

Conditions threatened by a conflict involving thermonuclear weapons would serve to exaggerate this deficiency. Anticipated casualties far exceed any number for which available medical personnel could provide adequate care. Under such circumstances, the dental officer should be able to do much more than attend to dental health needs: he should be of direct medical assistance. Awareness of this problem has led to the establishment of a training course for dental officers in the emergency care of casualties.

A Course in Casualty Care

The aim of the course is to provide practical training in emergency casualty treatment and to do it in such a way as to utilize the dental officer's fundamental knowledge of biologic sciences. Based on this, the course contains far more than the mechanics of basic first aid or even the procedures of advanced first aid and hopes to provide those skills which will enable the dental officer to contribute as fully as possible to the medical effort.

To say that the course is adaptable to the training of dental enlisted personnel is not paradoxical. Although obviously not as comprehensively trained in the biologic sciences as a dental officer, the dental technician possesses more scientific knowledge than does the average layman and therefore is able to contribute more to a total medical effort than one who is acquainted only with basic first aid procedures. Adaptation of the course material to the dental technician's level and the extensive use of training aids throughout the course will enable the technician to learn the proper procedures for emergency care and to become part of a force prepared to cope with any major emergency.

Function of the Manual

The manual has been designed and prepared as a guide in planning, organizing, preparing, and presenting a course of instruction in casualty care. The dental officer instructor is familiar with the contents, procedures, and materials of the course, having already received training in casualty care. The lesson plan outlines, together with advice and precepts of instruction itself, enable the instructor to conduct a course beneficial to each group.

PROCUREMENT OF TRAINING AIDS

Motion Picture Films and Filmstrips

Department of Defense activities may procure films and filmstrips as follows:

NAVY.--Activities should request films and filmstrips from the nearest appropriate (1) District Film Library, or (2) Training Aids Section.

MARINE CORPS.--Activities should request films and filmstrips from the nearest Marine Corps Training Aids Library.

AIR FORCE.--Activities should request films and filmstrips from (1) Air Force Film Library Center, 8900 South Broadway, St. Louis, Missouri, 63125, or (2) the nearest overseas Central Film Library.

ARMY.--Activities should request films and filmstrips from the nearest Army Audio-Visual Communications Center. Members of the medical profession and allied scientific groups may borrow films and filmstrips by forwarding their request directly to Commanding General, Attention: Surgeon of the Army (area of residence). If films and filmstrips are not available from either of these sources, requests may be made to Director, Armed Forces Institute of Pathology, Audio-Visual Communications Center, Washington, D.C., 20305.

CIVILIAN.--Request for Navy medical-dental training films should be addressed to the Director, Medical Film Library, U.S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland, 20014.

For further reference for film procurement a comprehensive listing is available in the Film Reference Guide for Medicine and Allied Sciences 1964, available by request from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402. Cost, \$2.50.

Training Aids Other Than Motion Picture Films and Filmstrips

Procurement sources for specific aids are as follows:

FACSIMILES OF ANATOMY.--Abdomen: Rogay Industrial and Commercial Models, 5514 Dorsey Lane, Bethesda, Maryland, 20015.

Arm: Rochester Products Company, 300 First Street, N.E., Rochester, Minnesota, 55901.

Neck: Rogay Industrial and Commerical Models, 5514 Dorsey Lane, Bethesda, Maryland, 20015.

MANIKINS.--Manikin (Medical Department, U.S. Navy): Rogay Industrial and Commercial Models, 5514 Dorsey Lane, Bethesda, Maryland, 20015.

Manikin ("Resusci-Anne"): Medical Supply Company, Rockford, Illinois,

61100 or Guardian Safety Equipment Company, 114 South 45th Street, Philadelphia, Pennsylvania, 19104.

MOULAGE KIT.--FSC-6910-540-6378: Federal Supply Catalog.

Formula for Facsimile Blood

Formula makes 5 gallons when mixed.

Glycerin	2 gal.
Water	2 gal.
Red vegetable dye	2 qts.
Yellow vegetable dye	1/2 qt.
Blue vegetable dye	22 cc.

TITLE: INTRODUCTION TO CASUALTY CARE DEMANDS

OBJECTIVES

- I. To impress upon the trainee the need to prepare for disasters.
- II. To indicate to the trainee the magnitude of meeting the demands of thermonuclear disaster.
- III. To have the trainee become familiar with tasks and procedures of medical assistance in emergency care situations.

TRAINING AIDS

Selection made by the instructor.

REFERENCES

- I. Editor. What's new in treatment of the injured. United States Navy Medical News Letter 45:7, 26 Mar. 1965.
- II. U.S. Department of Health, Education and Welfare, Public Health Service. The Role of the Dentist in National Disaster. Health Mobilization Series 1-2. Washington, U.S. Government Printing Office, 1964.
- III. American Medical Association. Summary Report on National Emergency Medical Care. Oct. 1959.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. Provides practical training in emergency lifesaving procedures beyond the scope of many first aid courses, including functions recommended for health personnel by the American Medical Association.
 - B. Emphasizes performance. Daily quizzes and a final examination will reflect emphasis.
 1. Part will be written.
 2. Practical skill displayed in problematic situation will be most important.
 - C. Aims to enable dental personnel to give greatest assistance to medical effort in event of emergency or disaster.

PRESENTATION

- I. Need to prepare for disasters.

LESSON PLAN 1

- A. Remember that human existence depends on adequate preparation to withstand unforeseen and unpredictable events.
 - 1. Accidental and natural events--floods, explosions, hurricanes, tornadoes--are accepted as possible occurrences.
 - 2. Event precipitated by human action--thermonuclear attack--must now be included among those disasters for which to prepare.
 - B. Survival will depend upon the nature and extent of preparations made.
- II. Magnitude of meeting the demands of thermonuclear disaster.
- A. More than half the total population will be casualties.
 - 1. 180,000 casualties in a city of 250,000.
 - 2. Types of injuries sustained.
 - a. Traumatic injuries.
 - b. Burns.
 - c. Radiation injuries.
 - d. Combinations of such injuries.
 - B. Essential items of civilization will be destroyed.
 - 1. Supplies such as food and water.
 - 2. Communications.
 - 3. Sewage disposal services.
 - 4. Electric power.
 - C. Success of the medical effort will depend upon cooperation of services within the Civil Defense organization (each should understand the problems and limitations of the other so that all may help attain the common goal).
 - 1. Casualty care requirements will demand maximum effort.
 - 2. Resourcefulness and ability to improvise will be necessary.
 - D. Problems that can be expected in casualty care effort.
 - 1. Lack, or inaccessibility, of supplies.
 - 2. Inadequate facilities.
 - 3. Lack of trained personnel.
- III. Tasks and procedures for medical assistance in casualty care situations.
- A. Role which dental personnel will play in casualty care effort.
 - 1. Provide or assist in direct casualty care utilizing acquired abilities.
 - a. Sound biologic science training.
 - b. Experience in handling people in extreme pain.
 - c. Use of manual dexterity.
 - d. Association with medical field.
 - e. Ability to remain calm in emergencies.
 - 2. Provide administrative assistance.
 - a. Sort casualties prior to medical triage.
 - b. Organize casualty care teams.
 - c. Arrange for provision of supplies and facilities.
 - 3. Train others in casualty care.
 - B. Necessity for practical training in casualty care procedures.

1. Provides proper and extensive training in first aid and emergency casualty care techniques.
2. Increases ease of performance.
3. Supplies an opportunity for the trainee to grasp the vast ramifications of mass casualty disasters.
- C. Instruction given on standard procedures.
 1. Control of hemorrhage.
 2. Emergency treatment of open chest wounds.
 3. Proper and adequate cleansing and treatment of wounds.
 4. Bandaging and splinting.
 5. Cardiopulmonary resuscitation.
 6. Treatment of shock.
 7. Preparation of casualties for transportation.
- D. Special training of dental personnel.
 1. Relief of pain.
 2. Establishment and maintenance of a patent airway.
 3. Administration of anesthetics.
 4. Parenteral therapy.
 5. Recognition of signs and treatment of radiation injury.
 6. Triage of facial and oral injury cases including oral surgery.
 7. Psychologic first aid.
 8. Emergency childbirth.

APPLICATION

Conduct class discussion.

SUMMARY

- I. Need to prepare for disasters.
 - A. Remember that human existence depends on adequate preparation to withstand unforeseen and unpredictable events.
 - B. Survival will depend upon the nature and extent of preparations made.
- II. Magnitude of meeting the demands of thermonuclear disaster.
 - A. More than half the total population will be casualties.
 - B. Essential items of civilization will be destroyed.
- III. Tasks and procedures for medical assistance in casualty care situations.
 - A. Role which dental personnel will play in casualty care effort.
 - B. Necessity for practical training in casualty care procedures.
 - C. Instruction given on standard procedures.
 - D. Special training of dental personnel.

LESSON PLAN 2

TITLE: BATTLE DRESSING STATION DUTY

OBJECTIVES

- I. To review for the trainee the nature and functions of a battle dressing station aboard ship.
- II. To review for the trainee the duties to be performed by battle dressing station personnel.
- III. To review for the trainee the responsibility of handling the casualties when abandoning ship.

TRAINING AIDS

- I. First aid supplies.
- II. Battle dressing station equipment.
- III. Surgical instrument and supply set L6545-927-4960.
- IV. Chalkboard, chalk, and eraser.

REFERENCES

- I. Emergency War Surgery, NATO Handbook (NavMed P-5059).
- II. Manual of the Medical Department, U.S. Navy (NavMed P-117), ch. 4.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. To know how to operate a battle dressing station is part of the military duty of naval dental personnel.
 - B. To know the procedures involved is essential for the performance of duty.

PRESENTATION

- I. Nature and functions of a battle dressing station.
 - A. Stations are casualty treatment centers controlled by the Medical Officer and manned by the ship's medical and paramedical personnel.
 - B. They function to
 1. Treat casualties as promptly as possible.
 - a. Return least wounded to duty.
 - b. Raise survival chances of seriously wounded.

2. Arrange for casualty transportation.
 - a. To main battle dressing stations or sick bay.
 - b. To medical transport or hospital ship.
 3. Aid in casualty evacuation if the order to abandon ship is given.
- C. Number and locations.
1. Varied according to ship type and size.
 2. Dispersed so that damage to one part of the ship will not disrupt the functioning of the entire medical department.
 - a. Sick bay may be designated as the main station.
 - b. Other stations located where aid can be given to the greatest number.
 3. Protected below armored decks when possible.
 4. Accessible to ship's battle stations.
- II. Duties to be performed by battle dressing station personnel.
- A. Assignments in ship's organization manual.
1. Officer in charge--Dental or Medical Corps officer.
 2. Medical treatment team--several medical and dental Hospital Corps personnel to assist officer in charge.
 3. Litter bearers--assigned from personnel of repair parties stationed in general area.
- B. Training.
1. Efficiency depends on training of personnel.
 2. Officer in charge should be completely familiar with the ship, its battle bill, and the battle dressing station; and should be qualified in emergency lifesaving measures.
 - a. Will be required to treat casualties.
 - b. May have to assume responsibility for all shipboard medical care.
 - c. Will have to instruct his station's corpsmen in their duties.
 - e. Often required to instruct crew members in casualty care.
 3. Medical team operation.
 - a. Knowledge of duties should be so thorough that performance is automatic.
 - b. One assignment per man during action.
 - (1) Casualty sorter.
 - (2) Surgical assistant.
 - (3) Communications man.
 - (4) Repair party member.
 - c. Assignments should be rotated.
 - (1) More closely knit teamwork is possible.
 - (2) Essential work will not be hampered by absences when demands of each job are known.
 - d. Group responsibility to set up the emergency operating room for use in a short time.
 4. Crew requirements.
 - a. Must be trained in casualty care.
 - (1) Self-aid.
 - (2) To aid fallen shipmates during battle security.

LESSON PLAN 2

- b. Training is a continuing process to be undertaken by the officer in charge of the battle dressing station.
 - (1) Establishes his leadership.
 - (2) Influences the maintenance of order and high morale.
- C. Battle dressing station equipment.
 - 1. Inventory (enough medical equipment and supplies to set up an emergency sick bay).
 - a. Lockers containing complete surgical and orthopedic instrument kits, dressing bandages, drugs, blankets, etc.
 - b. Emergency operating table and accessories.
 - c. Lavatory.
 - d. Stretchers of several types.
 - e. Emergency water tanks of adequate capacity.
 - f. Hot water heater.
 - g. Emergency operating lights.
 - h. Sterilizers.
 - i. Battle telephones.
 - j. Miscellaneous equipment (gas masks, first aid kits).
 - 2. Responsibilities of the officer in charge.
 - a. To familiarize himself with the equipment.
 - b. To maintain complete stocks in a state of readiness.
 - c. To be able to use equipment when necessary.
- D. Operation of the station during battle.
 - 1. Manning the station.
 - a. All assigned personnel report as soon as general quarters is sounded.
 - b. Medical treatment team begins functioning.
 - 2. Casualty treatment.
 - a. Dental and hospital corpsmen or crew members may give first aid to wounded prior to treatment at the station.
 - b. Ambulatory casualties.
 - (1) Will arrive at station as commanding officer relaxes battle security.
 - (2) Sorter should see that least wounded receive treatment as soon as possible.
 - (3) Casualties who can will return to battle stations immediately after treatment.
 - c. Badly wounded casualties.
 - (1) Transported to station by the repair party.
 - (2) Examined thoroughly.
 - (3) Treated for hemorrhage, shock, and pain.
 - (4) Transferred to dressing station under the supervision of the medical officers for more definitive treatment during lulls in battle.
 - (5) Treated more specifically as soon as the ship leaves the battle zone.
- E. Operation of the station after battle.
 - 1. Officer in charge.
 - a. Helps to sort casualties.
 - b. Applies dressings and bandages to lightly wounded.

- c. Sends seriously wounded to main dressing stations where surgical and nursing care is available.
 - d. Reexamines and, where necessary, replaces dressings, and bandages, and adjusts splints previously applied.
 - e. Supervises care of those wounded who remain at the station.
 - f. Remains at the disposal of the medical officer to render necessary assistance.
 - 2. Medical treatment team assists as necessary.
- III. Responsibility of handling the casualties when abandoning ship.
- A. Preliminary training in casualty care and "abandon ship" drills preclude panic and confusion.
 - B. Officer in charge of the battle dressing station.
 - 1. Supervises the moving of nonambulatory casualties to designated station for loading into boats.
 - 2. Supervises evacuation of nonambulatory casualties by all hands when ship is being abandoned.

APPLICATION

Conduct class discussion.

SUMMARY

- I. Nature and functions of a battle dressing station.
 - A. Stations are casualty treatment centers controlled by the Medical Officer and manned by the ship's medical and paramedical personnel.
 - B. They function to treat casualties, arrange transportation, and evacuate casualties in case of "abandon ship."
 - C. Number and locations.
- II. Duties to be performed by battle dressing station personnel.
 - A. Assignments in ship's organization manual.
 - B. Training.
 - C. Battle dressing station equipment.
 - D. Operation of the station during battle.
 - E. Operation of the station after battle.
- III. Responsibility of handling the casualties when abandoning ship.
 - A. Preliminary training in casualty care and "abandon ship" drills preclude panic and confusion.
 - B. Officer in charge of the battle dressing station.

LESSON PLAN 3

TITLE: ESTABLISHMENT OF AIRWAY (Cricothyroidotomy)

OBJECTIVES

- I. To have the trainee learn the causes, signs, and symptoms of an obstructed airway.
- II. To have the trainee learn the immediate procedure for opening an obstructed airway.

TRAINING AIDS

- I. Training film: Cricothyroidotomy (MN-7469). Color, sound, 8 minutes.
- II. Facsimile neck, with extra "skins."
- III. Instruments--13-gage needles, improvised instruments, scalpel, materials to keep the incision patent.
- IV. Slides--to illustrate anatomic structures in the area of an obstructed airway.
- V. Chalkboard, chalk, and eraser.

REFERENCES

- I. Standard First Aid Training Course (NavPers 10081-A).
- II. Sicher, H. Oral Anatomy, ed. 4. St. Louis, The C. V. Mosby Co., 1965.
- III. American Medical Association. Summary Report on National Emergency Medical Care. Oct. 1959.
- IV. Emergency War Surgery, NATO Handbook (NavMed P-5059).
- V. Putney, F. J. Complications and postoperative care after tracheotomy. A.M.A. Arch. Otolaryng. 62:272-6, Sept. 1955.
- VI. Shelden, C. H.; Pudenz, R. H.; Freshwater, D. B.; and Crue, B. L. A new method for tracheotomy. J. Neurosurg. 12:428-31, July 1955.
- VII. Janas, J. G. Emergency tracheotomy in the dental practice. The Dental Students Magazine, pp. 19-22, May 1955.
- VIII. Ulin, A. W., and Rosamoff, H. L. Management of airway in acute head injury. A.M.A. Arch. Surg. 67:756-60, Nov. 1963.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.

- III. Explain the importance of the subject.
- A. Emergency situations dramatize the need for personnel trained in the management of obstructed airways.
 - 1. Children swallow small objects.
 - 2. Food lodges in the throat.
 - 3. Accidental injuries cause airway obstruction.
 - 4. Major disasters may result in many casualties with obstructed airways.
 - B. Establishment of an airway before the heart stops beating may save a life.

PRESENTATION

- I. Causes, signs, and symptoms of an obstructed airway.
 - A. Causes of an obstructed airway.
 - 1. Foreign bodies.
 - 2. Tracheobronchial secretions.
 - 3. Laryngospasm.
 - 4. Glottic edema.
 - 5. Cervical emphysema.
 - 6. Paralysis.
 - 7. Spasm of vocal cords.
 - 8. Trauma.
 - B. Indications of an obstructed airway.
 - 1. Obvious injury to the face or neck.
 - 2. Dyspnea (difficult or labored breathing).
 - a. Terrified expression.
 - b. Frantic, clawing movements.
 - c. Strained neck muscles.
 - 3. Dysphonia (any impairment of voice).
 - 4. Grayish color of the skin.
 - 5. Cyanosis of lips, fingernail beds, and ear lobes.
 - 6. Depressed supraclavicular fossae.
 - 7. Depressed jugular notch.
 - 8. Depressed rib interspaces.
 - 9. Conditions 6, 7, and 8 accentuated upon inspiration.
 - C. Differential diagnosis of an obstructed airway and systemic respiratory arrest.
 - 1. Symptoms 4 and 5 common to both.
 - 2. Conditions 6, 7, and 8 peculiar to obstructed airway.
 - a. Lungs are straining, causing depressions.
 - b. When systemic respiratory arrest occurs there are no depressions.
 - (1) Airway is open.
 - (2) There is no effort to breathe and pressure in lungs and on body surface is equal.
 - 3. Treatment for two conditions differs.
 - a. Obstructed airway must be opened.
 - b. Systemic respiratory arrest demands resuscitation.

II. Immediate procedure for opening an obstructed airway.

- A. Examine casualty to determine cause of obstruction.
 - 1. Quickly protract the tongue as far as possible.
 - 2. Explore space between base of tongue and laryngeal opening.
 - a. Hold tip of tongue with gauze or handkerchief.
 - b. Probe pharynx with index finger of free hand.
 - 3. Remove obstruction with fingers or improvised instrument.
- B. Percuss if object is firmly lodged.
 - 1. If casualty's condition permits and help is available,
 - a. Steeply elevate the torso.
 - b. Sharply percuss the back.
 - 2. Object may be jolted out or dislodged by a forceful gust of air from the lungs.
- C. If above procedures fail, immediate cricothyroidotomy is necessary to save the casualty.
 - 1. Transverse incision into the cricothyroid space.
 - 2. Method of choice for field level emergency casualty treatment.
 - a. Easier to teach than tracheotomies.
 - b. Can be performed unassisted.
 - c. Requires no anesthetic.
 - d. Presents a minimum hemorrhage problem.
 - e. Few instruments necessary to make incision.
 - f. Anatomically safe.
 - g. Less training and experience necessary to perform the operation.
 - 3. Circumstances.
 - a. Performed when tracheotomies are not feasible because of lack of facilities or trained personnel.
 - b. Not intended to take the place of operating room procedures.
 - 4. Review anatomy of the anterior neck.
 - a. No major blood vessels are in the area immediately surrounding the cricothyroid space.
 - b. Hemorrhage usually can be controlled by pressure.
 - c. Large blood vessels, nerves, and glands are not disturbed when cricothyroidotomy is performed correctly.
 - 5. Cricothyroidotomy procedure.
 - a. Place casualty in supine position.
 - (1) Body straight.
 - (2) Shoulders elevated.
 - (3) Neck extended.
 - b. Locate thyroid space.
 - (1) Carefully determine the midline of the neck.
 - (2) Visualize a straight line drawn from the middle of the chin (symphysis), through the middle of the thyroid cartilage (Adam's apple), through the middle of the jugular notch.
 - (3) Palpate from the chin to the thyroid cartilage and down to the first transverse notch below.
 - (4) Almond-shaped notch is the cricothyroid space through which the airway will be opened.

- c. Make incision.
 - (1) Control casualty with one hand.
 - (2) Grasp blade with free hand.
 - (a) Between thumb and forefinger.
 - (b) Limit length (no more than 1/4 to 1/2 inch of blade should protrude).
 - (3) Use forefinger to guide blade to cricothyroid space.
 - (4) Thrust blade into space and remove.
 - (5) Insert blade handle into incision and turn 90°.
 - (a) Provides immediate exchange of air.
 - (b) Holds incision open until it can be made patent.
- d. Effect patency.
 - (1) Insert device into opening.
 - (a) Plastic or rubber tube.
 - (b) Any other instrument which will fit--hemostat, scissors, glasses frames.
 - (2) Secure device firmly with tape or best available substitute.
- e. PRECAUTIONS.
 - (1) Make sure the appliance holding the incision open is clean and in proper position and directed thoracically to avoid possible damage to vocal cords.
 - (2) Stay with the casualty until the obstruction is removed or elective procedure is undertaken.

APPLICATION

- I. Demonstration given by the instructor.
 - A. Use facsimile neck to demonstrate the procedure outlined for cricothyroidotomy.
 - 1. Divide into steps in accordance with outline.
 - 2. Emphasize important points at each step.
 - B. Exhibit and explain instruments used to perform cricothyroidotomy.
 - 1. 13-gage needle.
 - 2. Rest of listed training aids.
- II. Procedures practiced by the trainees.
 - A. During lecture period.
 - 1. Locate the cricothyroid space on at least two other trainees and mark it with a skin marking pencil (recommend practice on adult female and child).
 - 2. Check to make sure space has been located and marked correctly in each instance.
 - B. During laboratory period.
 - 1. Have each trainee perform cricothyroidotomy several times on the facsimile neck until you are certain he can do it correctly.
 - 2. Question the trainees on various points of the procedure.
 - 3. Repair or replace "skin" after each trainee's performance.
- III. Training film shown (projector and film prepared in advance).
- IV. Question and answer period conducted if time permits after practice.

LESSON PLAN 3

SUMMARY

- I. Causes, signs, and symptoms of an obstructed airway.
 - A. Causes of an obstructed airway.
 - B. Indications of an obstructed airway.
 - C. Differential diagnosis of an obstructed airway and systemic respiratory arrest.
- II. Immediate procedure for opening an obstructed airway.
 - A. Examine casualty to determine cause of obstruction.
 - B. Percuss if object is firmly lodged.
 - C. If above procedures fail, immediate cricothyroidotomy is necessary to save the casualty.

LESSON PLAN 4

TITLE: CONTROL OF HEMORRHAGE

OBJECTIVES

- I. To develop the trainee's knowledge of the need for immediate control of hemorrhage.
- II. To teach the trainee methods of control of hemorrhage.

TRAINING AIDS

- I. Training film: First Aid for Bleeding (MN-8182). Color, sound, 21 minutes.
- II. Manikin, Medical Department, U.S. Navy.
- III. Facsimile abdomen and moulages.
- IV. Materials for tourniquets.
- V. Battle dressings (all sizes).
- VI. Materials for ligation.

REFERENCES

- I. Bowers, W. F., and Hughes, C. W. Surgical Philosophy in Mass Casualty Management. Springfield, Ill., Charles C Thomas, 1960.
- II. Bowers, W. F. (ed.). Surgery of Trauma. Philadelphia, J. B. Lippincott Co., 1953.
- III. Emergency War Surgery, NATO Handbook (NavMed P-5059).

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. Adequate blood volume is essential for life and must be conserved.
 - B. Average adult body contains about 5-7 quarts of blood.

PRESENTATION

- I. Need for immediate control of hemorrhage.
 - A. Be prompt in taking action.
 - B. Use immediate procedure to control hemorrhage.
 - 1. Apply hand pressure.
 - a. Directly over or above the wound, or
 - b. At applicable pressure point if known.
 - 2. Elevate the injured part.
 - 3. Maintain pressure.
 - a. Until material for more adequate control can be obtained,
or
 - b. Until help arrives.
- II. Know methods of control of hemorrhage.
 - A. Recognize types of hemorrhage.
 - 1. Capillary hemorrhage has continuous oozing of blood.
 - 2. Venous hemorrhage has steady flow of blood.
 - 3. Arterial hemorrhage spurts or has steady flow of blood.
 - B. Control by pressure bandage method.
 - 1. Place compress over the wound.
 - 2. Secure compress with firmly placed bandage.
 - a. Ensure compress and bandage both extend well past the edges of the wound.
 - b. Do not position so tightly as to create tourniquet effect.
 - 3. Check pressure bandage periodically to
 - a. Determine that there is no blood seepage.
 - b. Ensure that no blood is flowing through or around the bandage.
 - c. Ensure the absence of tourniquet effect.
 - 4. Note that a battle dressing makes an excellent pressure bandage.
 - a. Combines compress and bandage ties.
 - b. Is available in three sizes.
 - C. Control by tourniquet method.
 - 1. USE ONLY WHEN OTHER MEANS FOR HEMORRHAGE CONTROL FAIL.
 - 2. Use web type.
 - 3. Place as near the wound as possible.
 - 4. Make certain the tourniquet can be seen easily.
 - 5. Note time applied on casualty tag or on tag attached to tourniquet.
 - 6. Initiate tourniquet application for

LESSON PLAN 4

- a. Traumatic amputation.
- b. Arterial hemorrhage associated with open fracture.
- D. Control by other methods.
 - 1. When no other method is adequate, ligatures and hemostats may be used to control arterial and venous hemorrhage (only by personnel with proper training and medical background).
 - a. May be applied to scalp wounds with skull fractures in the immediate area.
 - b. May be used to control hemorrhage from large vessels in areas where pressure is ineffective.
 - c. May be used to close wounds where a tourniquet cannot be applied.
 - 2. Sterile gauze packing may be used.
 - a. May be covered with a pressure bandage.
 - b. Must note clearly on casualty the time applied.
 - c. Check circulation regularly.
- E. Take precautions.
 - 1. Take care not to injure circulatory vessels or interrupt collateral circulation during hemorrhage control.
 - 2. Evacuate casualty by stretcher (handle gently to avoid reinducing hemorrhage).
 - 3. Keep casualty warm.
 - 4. Treat to prevent shock.

APPLICATION

- I. Demonstration given by the instructor.
 - A. Use manikin to demonstrate hemorrhage control.
 - 1. At pressure points.
 - 2. By pressure bandage.
 - a. Venous hemorrhage control.
 - b. Arterial hemorrhage control.
 - 3. By tourniquet method (at this time, reemphasize that tourniquet is treatment of "last resort").
 - B. Use facsimile abdomen to demonstrate arterial and venous hemorrhage control by ligature.
- II. Procedures practiced by the trainees as directed by the instructor.

SUMMARY

- I. Need for immediate control of hemorrhage.
 - A. Be prompt in taking action.
 - B. Use immediate procedure to control hemorrhage.
- II. Know methods of control of hemorrhage.
 - A. Recognize types of hemorrhage.
 - B. Control by pressure bandage method.
 - C. Control by tourniquet method.
 - D. Control by other methods.
 - E. Take precautions.

TITLE: TREATMENT OF SHOCKOBJECTIVES

- I. To have the trainee understand the nature of shock and recognize shock syndromes.
- II. To have the trainee understand casualty procedures for treating various types of shock.
- III. To have the trainee know shocklike conditions which do not respond well to normal shock treatment.

TRAINING AID

Training film: First Aid for Shock (MN-8183). Color, sound, 27 minutes.

REFERENCES

- I. Hershey, S. G. (ed.). Shock. Boston, Little, Brown & Co., 1964.
- II. Emergency War Surgery, NATO Handbook (NavMed P-5059).
- III. Syllabus of Lesson Plans for First-Aid Instructors (NavMed P-5056).
- IV. Schudder, J. Shock syndrome. Ann. New York Acad. Sc. vol. 55, 1952.
- V. Wiggers, C. J. Physiology of Shock. New York, Commonwealth Fund, 1950.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. The condition known as shock commonly follows injury.
 - B. Shock is a boundary between life and death.
 - C. Taking prompt measures to prevent or to reverse the progress of shock may preserve life.

PRESENTATION

- I. Understand the nature of shock and recognize shock syndromes.
 - A. Shock may follow any sudden upset of normal psychologic and physiologic processes.
 1. Shock is a condition of acute circulatory failure due to derangement of circulatory control or circulating fluid.
 2. Some degree of shock follows all injuries.
 - a. It may be slight lasting only a few minutes or it may be deeper and need treatment.

- b. It may appear immediately after trauma or it may come on many hours after an injury or wound.
 - c. It may be reversible or it may be irreversible.
 3. Shock must never be assumed to be a static condition--a shock casualty is either improving or he is deteriorating and both processes are progressive.
 - B. Shock is the result of three kinds of stress imbalances.
 1. That acting directly on the central nervous system is vaso-vagal or neurogenic shock.
 2. That produced from fluid losses is oligemic shock.
 3. That resulting from posttraumatic toxicity is toxic shock.
 - C. Mild shock should be treated if time permits.
 1. Do not defer treatment until the appearance of shock syndrome.
 2. Mild shock may be caused by psychic or neurogenic disturbance, slight injury, fright, horror.
 3. It may display syndrome of loss of consciousness; profuse perspiration; cool, moist skin; pallor; agitation; decreased blood pressure level; increased pulse rate.
 - D. Moderate, severe, or profound shock must be treated immediately.
 1. Take prompt action to reverse progress of shock.
 2. Prevent development of these stages if possible.
 3. Such shock may follow loss of effective circulating blood volume; any serious injury, hemorrhage, trauma, burns, blast asphyxia, or untreated mild shock; dehydration, fatigue, acidosis, pain, fear, exposure.
 4. Syndromes displayed may be those of mild shock; weakness; subnormal temperature; thirst, restlessness, apprehension; premonitions of impending death.
- II. Understand casualty procedures for treating various types of shock.
- A. Prevent shock when possible.
 1. Give prophylactic care to casualties suffering possible shock-producing injuries.
 2. Never neglect mild shock if time permits its care (if not treated, deeper shock may supervene particularly when there is prolonged syncope).
 - B. Treat shock promptly to reverse condition.
 1. Begin shock treatment.
 - a. Place casualty in shock position.
 - (1) Supine body.
 - (2) Legs elevated about 6 inches.
 - b. Unless contraindicated by wound state, always utilize this position.
 - (1) Constitutes important part of treatment.
 - (2) Ensures return of blood pooled in extremities.
 - (3) Permits adequate cardiac function.
 - (4) Roughly equal to a 500 cc. blood transfusion.
 - c. Do not exaggerate position (exaggeration accomplishes nothing more).
 - d. Conserve and maintain body heat--but DO NOT increase it.
 - (1) Encourage peripheral vasoconstriction.

- (a) Compensates for reduced circulating blood volume.
 - (b) Ensures adequate blood supply to the heart.
 - (2) Remember that excessive heat produces peripheral vasodilation.
 - (a) Reverses constricting mechanism.
 - (b) Endangers life.
- 2. Treat casualty to relieve pain, which is a major cause of shock.
 - a. Attempt to ease pain by repositioning casualty for comfort.
 - b. Use drug relief when necessary (review use of morphine).
 - (1) CAUTION: Do not regard drugs as panaceas.
 - (2) Recognize that casualty's reactions may be caused by something other than pain--thirst, anoxia, full bladder.
- C. Understand the reasons why shock must be checked immediately.
 - 1. Loss of effective circulating blood volume causes anoxia (lack of aerated blood) which is damaging to kidneys and brain.
 - 2. Extravascular fluid loss further reduces circulating blood volume.
 - 3. Blood pressure drops.
 - 4. Venous return diminishes.
 - 5. Peripheral circulation becomes more inadequate.
 - 6. Blood supply to tissues is impaired.
 - 7. Chain of events terminates in death.
- D. Utilize active treatment to reverse condition.
 - 1. Replace lost blood with whole blood or plasma volume expanders.
 - 2. Accomplish other necessary emergency measures concomitantly.
 - a. Arrest hemorrhage.
 - b. Relieve pain.
 - c. Debride necrotic tissue.
 - 3. Avoid temporization or delay.
- E. Learn shock states which present special problems and the way to handle them.
 - 1. Hemorrhagic shock (loss of blood).
 - a. Stanch hemorrhage.
 - b. Transfuse whole blood and plasma volume expanders.
 - c. Prevent tissue anoxia and toxemia for good prognosis.
 - 2. Traumatic shock and crush syndrome.
 - a. Exhibits tissue necrosis.
 - b. Does not have serious blood loss (hemorrhage may be minor or nonexistent).
 - c. Displays symptoms of interrupted circulation as when movement is restricted.
 - d. Produces circulation of venous blood and resulting toxic products.
 - e. Has no known effective means of treatment; however, the following is beneficial.
 - (1) Transfuse whole blood and plasma volume expanders.
 - (2) Add alkaline, such as sodium bicarbonate, to the diet for 24 hours.

3. Burn shock (continuous loss of body fluid).
 - a. Exhibits initial loss of red blood cells due to heat.
 - b. Displays tissue damage compatible with size and degree of the burn.
 - c. Undergoes subsequent loss of serum and plasma.
 - d. Reduces circulating blood volume, which causes hemoconcentration.
 - e. Displays absorption of toxicants from the destroyed tissues.
 - f. Provide treatment by administering whole blood early.
 - (1) Restores circulating blood volume.
 - (2) Replaces damaged red blood cells.
 - g. Care for wound.
 - h. Follow with transfusion of plasma volume expanders.
 - (1) Supports circulating blood volume.
 - (2) Does not increase hemoconcentration.
4. Shock from blast injuries.
 - a. Results from sudden, violent movements of air or water.
 - b. Air blast syndromes.
 - (1) Parenchymal lung hemorrhage caused by traumatic rib action.
 - (a) Hemoptysis.
 - (b) Atelectasis.
 - (c) Gross bronchial rales.
 - (d) Spontaneous pneumothorax.
 - (2) Pulmonary edema and reduced vital capacity.
 - (a) Anoxia.
 - (b) Loss of effective circulating blood volume.
 - c. Immersion blast syndromes.
 - (1) Injuries generally confined to abdominal cavity.
 - (2) Possible rupture of abdominal organs or viscera.
 - d. Prepare to treat anyone in the vicinity of a blast even though he has no detectable wound.
 - (1) Follow general procedure of shock treatment.
 - (2) Give transfusion with care.
 - (a) Remember that overtransfusion of fluids, especially saline solutions, may increase any pulmonary edema present.
 - (b) Recognize that concentrated solutions of red cells and plasma volume expanders help to remove some fluid from the lungs.
 - e. Administer antibiotics early to prevent pneumonia and to reduce danger from peritonitis.
 - f. Sedate cough as it develops.
 - g. Be alert for acute abdominal injuries (their presence constitutes a surgical emergency).

III. Know shocklike conditions which do not respond well to normal shock treatment.

- A. Damage to the central nervous system.
 1. May produce any or all symptoms usually associated with shock.

2. Under field conditions, reveals true symptoms by malfunctioning reflexes, cranial nerve function, pupil and eye movements.
3. Suspect skull fracture and examine ears and nose for signs of hemorrhage.
- B. Symptoms of toxic gas poisoning.
 1. Shocklike state which does not respond to treatment.
 2. Pulmonary edema.
 3. Signs of intracranial changes.
 4. Treat by administering oxygen under pressure.
- C. Reflex paralysis, battle exhaustion, and shock psychosis.
 1. May respond well initially to shock therapy.
 2. Later becomes serious behavior problem.
 3. Evacuate as soon as possible for psychiatric care to prevent deleterious effects on other casualties and to prevent further emotional trauma.
- D. Remember too that any combination of the described injuries is possible.
 1. Casualty with flash burns may also suffer blast injury or gas poisoning.
 2. Complicates task of rendering early treatment.

APPLICATION

Conduct class discussion.

SUMMARY

- I. Understand the nature of shock and recognize shock syndromes.
 - A. Shock may follow any sudden severe upset of normal psychologic and physiologic processes.
 - B. Shock is the result of three kinds of stress imbalances.
 - C. Mild shock should be treated if time permits.
 - D. Moderate, severe, or profound shock must be treated immediately.
- II. Understand casualty procedures for treating various types of shock.
 - A. Prevent shock when possible.
 - B. Treat shock promptly to reverse condition.
 - C. Understand the reasons why shock must be checked immediately.
 - D. Utilize active treatment to reverse condition.
 - E. Learn shock states which present special problems and the way to handle them.
- III. Know shocklike conditions which do not respond well to normal shock treatment.
 - A. Damage to the central nervous system.
 - B. Symptoms of toxic gas poisoning.
 - C. Reflex paralysis, battle exhaustion, and shock psychosis.
 - D. Remember too that any combination of the described injuries is possible.

LESSON PLAN 6

TITLE: CARDIOPULMONARY RESUSCITATION

OBJECTIVES

- I. To have the trainee learn the causes, signs, and symptoms of respiratory failure and cardiac arrest.
- II. To acquaint the trainee with the techniques of pulmonary resuscitation and external cardiac massage.
- III. To have the trainee practice the procedures of mouth-to-mouth or mouth-to-nose breathing and closed-chest cardiac massage.

TRAINING AIDS

- I. Training films:
 - A. Resuscitation--First Aid. Part 4, Mouth-to-Mouth, Mouth-to-Nose (MA-9559). Color, sound, 23 minutes.
 - B. Life in Your Hands, SK&F Medical Film Center.* Black and white, sound, 14 minutes, for nonprofessional audience.
 - C. External Cardiac Massage, The Johns Hopkins Medical Institutions, SK&F Medical Film Center.* Color, sound, 27 minutes, for professional audience only.
- II. Slides: Emergency Measures in Cardiopulmonary Resuscitation. Heart Association of Maryland.**
- III. Manikin: "Resusci-Anne."
- IV. Chalkboard, chalk, and eraser.

REFERENCES

- I. Jude, J. R.; Kouwenhoven; W. B.; and Knickerbocker, G. G. Cardiac arrest report of application of external cardiac massage on 118 patients. J.A.M.A. 178:1063-70, 11 Dec. 1961.
- II. Kouwenhoven, W. B.; Jude, J. R.; and Knickerbocker, G. G. Closed-chest cardiac massage. J.A.M.A. 173:1064-67, 10 July 1960.
- III. Gordon, A. S.; Frye, C. W.; Gittelson, L.; Sadove, M. S.; and Beattie, E. J., Jr. Mouth-to-mouth versus manual artificial respiration for children and adults. J.A.M.A. 167:320-28, 17 May 1958.
- IV. Elam, J. O.; Greene, D. G.; Brown, E. S.; and Clements, J. A. Oxygen and carbon dioxide exchange and energy cost of expired air resuscitation. J.A.M.A. 167:328-34, 17 May 1958.

*1500 Spring Garden Street, Philadelphia, Pennsylvania, 19130
**415 N. Charles Street, Baltimore 1, Maryland, 21201

- V. Safar, P. Ventilatory efficacy of mouth-to-mouth artificial respiration airway obstruction during manual and mouth-to-mouth artificial respiration. J.A.M.A. 167:335-41, 17 May 1958.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. Presuming the airway is clear, direct breathing ventilates the lungs to a remarkable degree; closed-chest cardiac massage adequately circulates the blood.
 - B. The COMBINED USE of direct breathing and external (closed-chest) cardiac massage has revolutionized management of cardiac and respiratory arrest and has eliminated need for open-chest massage, except in the operating room.
 - C. Resuscitative measures instituted within 4 to 6 minutes prevent irreversible damage to the central nervous system.
 - D. Direct breathing and closed-chest cardiac massage have been proven to be practical, effective, easily taught, learned, and applied.

PRESENTATION

- I. Causes, signs, and symptoms of respiratory failure and cardiac arrest.
 - A. Possible causes for respiratory or cardiac failure.
 1. Electric shock.
 2. Myocardial infarction (heart attack).
 3. Drowning.
 4. Strangulation.
 5. Suffocation.
 6. Shock (either neurogenic or oligemic).
 7. Anaphylactic shock.
 8. Anesthesia reaction.
 9. Chest trauma.
 10. Depressive drug overdose.
 - B. Respiratory failure may occur as a single entity, but cardiac arrest is always accompanied by respiratory failure.
 - C. Possible causes for respiratory failure.
 1. Breathing air devoid of oxygen.
 2. Occluded airway.
 3. Excessive use of drugs or alcohol.
 4. Inhalation of smoke or poisonous gas.
 5. Wounds or disease which interfere with normal respiration.
 - D. Signs and symptoms of respiratory or cardiac failure.
 1. Loss of consciousness.
 2. No discernible respirations or heartbeat.
 3. May have no perceptible peripheral pulse, yet the heart may still be beating (oxygenation of the blood through direct

breathing will usually restore the blood pressure and strengthen the pulse).

4. BILATERAL dilatation of the pupils of the eyes which do not react to light (late symptom).
5. Cyanosis (except in casualties of carbon monoxide poisoning).

II. Techniques of pulmonary resuscitation and external cardiac massage.

A. Methods of administering pulmonary resuscitation.

1. Direct breathing (mouth-to-mouth or mouth-to-nose) method.
 - a. Found most effective.
 - b. Endorsed by the Armed Forces and the American Red Cross.
2. Procedure for mouth-to-mouth method.
 - a. Place the casualty on his back.
 - b. Clear the mouth of debris.
 - c. Extend the neck.
 - d. Grasp the mandible, pull and hold it in a forward and upward position.
 - e. Pinch the nostrils.
 - f. Seal your mouth over the casualty's mouth.
 - g. Blow until the chest lifts.
 - h. Remove your mouth and listen for a return rush of air which indicates an air exchange. If no indication of air exchange,
 - (1) Check the position of the head and jaw.
 - (2) Turn the casualty on his side and percuss between the shoulder blades to dislodge any foreign matter.
 - (3) Clear the casualty's mouth and resume rescue breathing.
 - i. Follow the pattern of seal, blow, and listen; repeat 10 to 15 times per minute.
3. Procedure for mouth-to-nose method.
 - a. Follow steps a, b, and c above.
 - b. Close the casualty's mouth by pressure under the chin and on the lower lip.
 - c. Seal your mouth over the casualty's nose.
 - e. Follow steps g through i as outlined above.
4. Manual application (artificial respiration).
 - a. Is of little value (indicated only when direct breathing is contraindicated).
 - b. Apply by prone pressure method, or
 - c. Apply by arm lift-back pressure method.
5. Mechanical equipment method.
 - a. Necessitates prior knowledge of the technique of operation.
 - b. Should not be used during external cardiac massage because of the tripping mechanism of the resuscitator when pressure is applied.
 - c. Is not always available.
 - d. Is very efficient.
 - e. Is nontiring to the operator.
 - f. May have a signal to warn of occluded airway or suction apparatus of the aspirator.

- g. Is excellent for resuscitation of a casualty with multiple injuries.
 - B. Method of administering external cardiac massage through properly applied chest compression.
 - 1. Place the casualty in a supine position preferably on a rigid support (usually on the floor or ground).
 - 2. Position your hands in the chest area.
 - a. Bend one hand at the wrist joint and place the heel of the hand on the lower third of the sternum.
 - (1) Fingers of the hand are extended in direction of the ribs, but not in contact with them.
 - (2) Careful hand position is mandatory to preclude damage or fracture to the ribs and consequently underlying vital organs.
 - b. Place other hand over the heel area of the first hand.
 - 3. Push quickly downward on the positioned hands until a firm pressure is exerted on the chest.
 - a. Take a position so that your body weight can be used in applying the pressure.
 - b. Hold pressure for about 1/2 second and quickly release.
 - 4. Apply sufficient pressure to depress the sternum about 4 to 5 cms. (1 1/2 to 2 inches) toward the vertebral column.
 - a. Apply half the pressure at your command for children (use finger pressure for infants).
 - b. Check for pulse.
 - 5. Lift the hand slightly at the end of each stroke to permit full expansion of the chest. Repeat continuing closed-chest compressions at the rate of one per second, counting "one thousand and one," etc.
 - 6. Unless spontaneous respiration is continuing or resumes, mouth-to-mouth respiration must be continued.
 - a. A second person should do this.
 - b. If alone, interrupt cardiac massage about twice a minute and give 2 or 3 quick breaths mouth-to-mouth, then resume massage.
- III. Procedures of mouth-to-mouth or mouth-to-nose breathing and closed-chest cardiac massage.
- A. BEGIN AT ONCE.
 - 1. Transport the casualty only as far from the scene of the accident as absolutely necessary for safety.
 - 2. Do not wait for help or equipment to arrive.
 - 3. Position the casualty and proceed.
 - B. Start direct breathing procedures.
 - 1. Clear and maintain airway.
 - 2. Continue resuscitation without interruption (using team effort if prolonged).
 - 3. Synchronize efforts with the casualty's attempts to breathe independently.
 - 4. Time breaths given for at least 10 to 15 breaths per minute.
 - C. Administer external cardiac massage if indicated.

LESSON PLAN 6

1. Remember that the effectiveness of cardiac massage is based upon entrapment of the heart between the sternum in front and the vertebral column behind. Applied chest compression then forces the blood from the heart into the arteries and pulmonary veins. Relaxation of pressure allows the heart to fill with venous blood. Palpability of peripheral (femoral) pulse is best index of effectiveness.
- D. Know procedure for team effort and for individual effort.
 1. Team effort.
 - a. One member immediately ventilates casualty's lungs rapidly 3 times, continuing thereafter giving breath between every 5th and 6th heart compression.
 - b. Other member immediately provides UNINTERRUPTED manual heart compression at a rate of 60 times per minute.
 2. Individual effort.
 - a. Immediately ventilate the casualty's lungs rapidly 3 times.
 - b. Shift position slightly and apply heart compressions 15 times at a rate of 1 per second.
 - c. Shift back and give artificial ventilation 2 times.
 - d. Return to position for applying heart compressions and repeat thereafter steps b and c.

APPLICATION

- I. Have trainees practice technique of direct breathing and external cardiac massage.
- II. Use a training model for direct breathing practice.
- III. Use each other WITHOUT extreme pressure being applied for cardiac massage.

SUMMARY

- I. Causes, signs, and symptoms of respiratory failure and cardiac arrest.
 - A. Possible causes for respiratory or cardiac failure.
 - B. Respiratory failure may occur as a single entity, but cardiac arrest is always accompanied by respiratory failure.
 - C. Possible causes for respiratory failure.
 - D. Signs and symptoms of respiratory or cardiac failure.
- II. Techniques of pulmonary resuscitation and external cardiac massage.
 - A. Methods of administering pulmonary resuscitation.
 - B. Method of administering external cardiac massage through properly applied chest compression.
- III. Procedures of mouth-to-mouth or mouth-to-nose breathing and closed-chest cardiac massage.
 - A. BEGIN AT ONCE.
 - B. Start direct breathing procedures.
 - C. Administer external cardiac massage if indicated.
 - D. Know procedure for team effort and for individual effort.

TITLE: WOUND BALLISTICS, DEBRIDEMENT, AND CLOSUREOBJECTIVES

- I. To introduce to the trainee the basic principles of wound ballistics.
- II. To instruct the trainee in the principles of wound debridement.
- III. To instruct the trainee in the principles of immediate wound closure.

TRAINING AIDS

- I. Training film: Debridement. Part 2, Wounds of the Extremities (PMF-5305). Color, sound, 33 minutes.
- II. Felt suture board, fabricated or supplied locally.
- III. Chalkboard, chalk, and eraser.

REFERENCES

- I. Coates, J. B., ed. Wound Ballistics. Medical Department, U.S. Army, Office of the Surgeon General, Department of the Army, U.S. Government Printing Office, Washington, 1962.
- II. Silliphant, W. M., and Beyer, J. C. Wound Ballistics. Mil. Med. 117:247, Sept. 1955.
- III. National Research Council, Committee on Surgery. Burns, Shock, Wound Healing, and Vascular Injuries. Philadelphia, W. B. Saunders Co., 1943.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. A large percentage of the surgery done in mass casualty situations will consist of wound debridement and closure.
 - B. Because of his basic knowledge, digital skill, and previous experience with debridement instruments, the dental officer is expected to perform this minor surgery well, particularly if wounds occur in the facial regions.
 - C. A fundamental understanding of wound ballistics and the technique and rationale of debridement will further the preservation of life and limb in event of casualty.

PRESENTATION

I. Basic principles of wound ballistics.

A. Wound ballistics is the science dealing with the motions of projectiles and the role of projectiles in wound production.

B. Wounding agents.

1. Origin.

a. High speed.

(1) Rifle or machinegun projectiles.

(2) Fragments of bombs or shells detonated at close range.

(3) Pistol or submachinegun bullets fired at close range.

b. Low speed.

(1) Spent rifle or machinegun projectiles.

(2) Fragments of distantly detonated bombs or shells.

(3) Pistol and submachinegun bullets fired at normal combat distances.

(4) Most grenade, mine, mortar, and fragmentation missiles.

(5) Blast debris.

2. Physical properties.

a. Velocity.

(1) Initially imparted by projecting weapon.

(2) Reduced at a rate determined by projectile weight and size.

b. Stability.

(1) "True" flight of airborne projectile is rarely duplicated within body tissues.

(2) Instability of projectile greatly influences nature and extent of wound.

c. Mechanical cohesiveness.

(1) Soft- or hollow-nosed projectiles have increased wounding power.

(2) Fragmenting projectiles increase wound severity.

C. Wound production.

1. Missiles destroy tissue in proportion to

a. Speed.

(1) Higher velocities cause more tissue damage.

(2) Greater amount of kinetic energy transferred.

b. Weight, shape, and size.

(1) Heavier missiles.

(a) Lose speed more slowly.

(b) Contact more tissue.

(c) Often perforate tissues.

(d) Cause more tissue damage than light ones.

(2) Irregularly shaped missiles.

(a) Lose speed rapidly.

(b) Often penetrate tissue and remain.

(c) Cause more tissue damage than smooth missiles.

(3) Size (the greater the size, the greater the damage).

c. Tissue resistance.

(1) Elasticity of skin.

(2) Resistance of internal tissue to disruptive force.

- (3) The greater the mass of tissue, the greater the damage.
- (4) Missiles striking bone create more missiles of the shattered bone.
- 2. Greater destruction of tissue necessitates more radical debridement procedures.

II. Principles of wound debridement.

A. Types of wounds requiring debridement.

- 1. Penetrating.
 - a. Disrupted skin.
 - b. Wound of entry only.
- 2. Perforating.
 - a. Disrupted skin.
 - b. Entrance and exit wounds.
- 3. Mutilating.
 - a. Gross disfiguration.
 - b. Traumatic amputation sometimes present.

B. Initial considerations.

- 1. Blood supply potentially available.
 - a. Adequate supply decreases the danger of infection (tetanus, gas, gangrene).
 - b. Many supply sources in the head and face.
 - c. A few main vessels supply the extremities.
 - d. The greater the blood supply, the less the need for debridement.
 - e. The poorer the blood supply, the greater the need for debridement.
- 2. Musculature.
 - a. Extremities possess deep, heavy areas of muscle.
 - b. Head and face have little depth of tissue except for the brain.
 - c. Head and face injuries generally require less debridement than others.
- 3. Specialized tissues (mucosa, nerve, bone, gland ducts).
 - a. Destruction generally interferes with function of the part or organism as a whole.
 - b. Careful debridement provides best opportunity for survival with least disfigurement and disability.
- 4. Salivary organs.
 - a. Glands.
 - (1) Usually recover well.
 - (a) When ductile structures remain nearly intact.
 - (b) Fistulas which frequently develop usually close after conservative measures.
 - (2) Do not remove glands unless damage is extreme.
 - b. Ducts.
 - (1) Improper initial care can result in accidental burial of a severed duct.
 - (a) Permits discharge of saliva into the tissues.
 - (b) Fluids form large pools.
 - (1) Dissect tissue layers.
 - (2) Eventually form fistulas or sinus tracts outside the mouth.

- (2) To avoid more difficult problems.
 - (a) If severed duct can be located, free it and lead it into the mouth.
 - (b) If severed duct cannot be located.
 - (1) Extirpate gland.
 - (2) Deactivate gland by radiation.
 - (c) If damaged duct cannot be joined or exteriorized, ligate (blocked gland will atrophy).
- 5. Bone.
 - a. Conserve whenever possible.
 - (1) Comminuted, contaminated, or detached bone formerly removed routinely because of probability of infection.
 - (2) Loss of bone substance presents problem in immobilization and reconstruction.
 - (3) Antibiotics now make free grafts possible.
 - b. Clean and replace, PROVIDED IT CAN BE COVERED COMPLETELY WITH VITAL TISSUE.
- 6. Mucous membrane.
 - a. Debride conservatively.
 - b. Remove only hopelessly crushed and lacerated substance.
 - (1) Blood supply is generally good (recovery ability high).
 - (2) Lack of good donor sites makes replacement difficult.
- 7. Teeth.
 - a. When practical, remove from lines of fracture.
 - b. Delay removal.
 - (1) If roots or teeth in fragments of fractured jawbone are sole means of managing those fragments.
 - (2) If removal would tend to detach the fragment from soft tissues remaining.
 - c. When possible, search for tooth fragments embedded in soft tissue.
 - (1) Strong potential source of infection.
 - (2) May produce severe reaction of fibrous tissues.
 - (a) Heavy scars.
 - (b) Adhesions.
- 8. Preserve specialized structures whenever possible.
- C. Procedure.
 - 1. Prepare surrounding skin.
 - a. Shave wide margin.
 - b. Scrub carefully with soap and water.
 - c. Paint with antiseptic.
 - 2. Incise.
 - a. Skin and fascia above and below wound.
 - b. Open wound to depths (retract muscles for clear visualization of debridement field).
 - c. Counterincise large wound if necessary to provide dependent drainage.
 - 3. Explore with finger to determine extent of damage.
 - a. Remove foreign bodies.
 - (1) Essential to good cosmetic results and freedom from infection.

- (2) Gentle irrigation with normal saline solution may help wash out sand, dirt, and debris.
- b. Free of blood clots, accumulations of serum and exudate.
- 4. Excise ALL nonvital tissue with care.
 - a. Skin.
 - (1) Trim frayed, crushed edges back to where bleeding starts or gross discoloration ends.
 - (2) Usually can be replaced from elsewhere.
 - b. Fascia and fat.
 - (1) Fascia survives well (conserve for future use in closure when possible).
 - (2) Remove any fat which protrudes (contaminated or damaged fat tends to necrose).
 - c. Muscle.
 - (1) Trim back to where bleeding starts or gross discoloration ends.
 - (2) Devitalized muscle tissue contributes to breakdown of closure, shock-producing toxemia, and gangrene.
- 5. Avoid damaging blood supply, nerves, other vital structures.
- 6. Prepare most soft tissue wounds for delayed primary closure.
 - a. Ligate bleeding points.
 - b. Leave skin and subcutaneous tissue unsutured.
 - (1) Primary healing will determine time of closure.
 - (2) Usually closed within 7 days.
 - c. Dress wound to protect vital tissues.
 - (1) Lay sterile, fine mesh vaseline gauze or parachute silk between walls of wound.
 - (2) Pack LOOSELY with fluffed gauze.
 - (3) Place nonconstricting protective dressing on surface.
- 7. Immobilize and slightly elevate injured part.
- 8. Suture when conditions indicate.

III. Principles of immediate wound closure.

- A. Management of choice for maxillofacial wounds, sucking chest wounds, hand and head injuries.
- B. Done as soon after injury as possible.
 - 1. Cleanse and prepare surrounding area.
 - 2. Excise, "economically" when debriding devitalized tissues of face, head, and hand.
 - 3. Control bleeding.
 - 4. Suture.
 - a. Muscle fibers.
 - (1) End to end in normal anatomic position.
 - (2) Reattach to bone where possible.
 - (3) Use absorbable suture.
 - b. Fascia and fat.
 - (1) Close in layers as accurately as possible.
 - (2) "Borrow" layers to aid in adequate closure where tissue has been lost.
 - c. Mucous membrane where necessary to isolate the oral cavity in wounds of the face.
 - d. Skin.

LESSON PLAN 7

- (1) Plan closure pattern.
 - (2) Outline flaps with sterile skin pencil or gentian violet.
 - (3) Cut to full thickness with sharp knife.
 - (a) Perpendicular to surface.
 - (b) As even and straight as possible.
 - (4) Undermine complete thickness of edges and flaps to permit closure without tension.
 - (5) Preserve blood supply by leaving broad bases to all flaps.
 - (6) Close subcutaneous tissue with absorbable sutures.
 - (7) Approximate flaps with absorbable trial subcuticular sutures, tying knots downward.
 - (8) When approximation is satisfactory, close with non-absorbable sutures.
 - (a) Fine material, closely spaced.
 - (b) Tie to one side of wound.
 - (9) Use as little tension as possible (employ retention-type sutures, vertical or horizontal mattress, when tension is necessary).
 - (10) If the defect cannot be closed with skin available.
 - (a) Leave partially open where tension occurs.
 - (b) Dress with sterile, fine-mesh vaseline gauze or parachute silk.
 - (c) Await granulation tissue formation.
 - (1) Skin can then be undermined and wound closed.
 - (2) Graft can be used to cover if necessary.
- e. Immobilize region by use of a pressure bandage.
- f. Reduce underlying fractures.
- g. Provide adequate drainage.
5. Do not jeopardize success of case management by attempting to obtain perfect cosmetic results following serious wounding.
- a. Elaborate immediate pedicle flaps and revisions frequently fail.
 - (1) Wounds are essentially contaminated.
 - (2) Additional tissue loss, drainage, and suppuration are the rule rather than the exception.
 - b. Return the tissues to as nearly normal position as possible with future revision in mind.
 - (1) Secondary closure.
 - (2) Correction of defects.
 - c. In mass casualty situations, hemorrhage control, treatment of shock, and provision of airway are of primary importance (definitive treatment frequently must wait).

APPLICATION

- I. Demonstration given by the instructor.
- II. Procedures practiced by the trainees as directed by the instructor.
- III. Training film shown (projector and film prepared in advance).

SUMMARY

- I. Basic principles of wound ballistics.
 - A. Wound ballistics is the science dealing with the motions of projectiles and the role of projectiles in wound production.
 - B. Wounding agents.
 - C. Wound production.
- II. Principles of wound debridement.
 - A. Types of wounds requiring debridement.
 - B. Initial considerations.
 - C. Procedure.
- III. Principles of immediate wound closure.
 - A. Management of choice for maxillofacial wounds, sucking chest wounds, hand, and head injuries.
 - B. Done as soon after injury as possible.

LESSON PLAN 8

TITLE: DRESSINGS AND SPLINTSOBJECTIVES

- I. To familiarize the trainee with wound dressings.
- II. To familiarize the trainee with splints.

TRAINING AIDS

- I. Training film: Bandaging for Hospital Corpsmen (MN-9319), Parts A-Q. Black and white, silent, 21 minutes (total).
- II. Manikin, Medical Department, U.S. Navy.
- III. Assorted battle dressing packets.
- IV. Bandages and materials for improvised bandages.
- V. Traction splints, fixation splints.
- VI. Various materials for improvised splints.
- VII. Chalkboard, chalk, and eraser.

REFERENCES

- I. Handbook of the Hospital Corps, United States Navy (NavMed P-5004).
- II. American National Red Cross. First Aid Textbook, ed. 4. Garden City, L.I., Doubleday and Company, Inc., 1957.

LESSON PLAN 8

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. "Wounds must be covered" is a fundamental maxim in the treatment of most injuries.
 - B. Many cases of fracture can be expected as a result of modern warfare methods.
 - C. Correct splinting plays an important role in the control of shock and the prevention of permanent disability.

PRESENTATION

- I. Wound dressing.
 - A. Is any material used to cover or dress a wound.
 - B. Is used for purpose of hemorrhage control, prevention of further wound contamination, prevention of further injury to wound.
 - C. Is sterile (wet or dry) when possible.
 - D. Is made up of components--the compress and the bandage.
 1. Compress.
 - a. Is a pad of sterile material placed next to the wound surface.
 - b. Is employed in general use to protect wound surface.
 2. Bandage.
 - a. Is any material used to keep the compress in place.
 - (1) Recognize that a neat, properly applied bandage indicates a correctly applied compress.
 - (2) Remember that the comfort and well-being of the casualty often depend upon proper application.
 - b. Select types and uses.
 - (1) Triangular.
 - (a) Made by cutting a 36- to 40-inch square of material diagonally.
 - (b) Used to secure dressings over large areas of the body, to make a sling for an arm or collarbone, or to secure splints.
 - (2) Cravat.
 - (a) Made by bringing point of triangular bandage to middle of its base and continuing to fold to desired width.
 - (b) Used to secure dressings on the cranium, eye, elbow, knee, arm, forearm, leg, or thigh; or to support strained or sprained ankle (in conjunction with the casualty's shoe).
 - (3) Roller.
 - (a) Is a long strip of material wound cylindrically.
 - (b) Is used on almost any portion of the body to secure dressings and splints, to immobilize fractures, to support injured joints.

- (4) Barton.
 - (a) Is made from roller bandage.
 - (b) Is of special interest to dental officer to support fractured mandible, to hold dressings on chin.
- c. Choose means to secure the bandage.
 - (1) Square knot.
 - (a) Is simple, neat, quick.
 - (b) Is easily untied by "tripping" and sliding apart.
 - (2) Adhesive or cellulose tape.
 - (3) Safety pins.
- E. May be prepared and stored or may be improvised when needed.
 - 1. Prepared dressings.
 - a. Packaged in sealed wound dressing packet.
 - (1) Has sterile gauze compress with attached bandage.
 - (2) Is supplied in 3 sizes to all armed services medical units in hermetically sealed covering which is designed to be used without destroying sterility of the compress.
 - b. Universal Protective Dressing.
 - (1) Used primarily for burns.
 - (2) Made up from components.
 - (a) Fine-mesh gauze (inner layer).
 - (b) 1 inch of absorbent cotton.
 - (c) Many layers of nonabsorbent cellulose.
 - (d) Moisture repellent outer layer (prevents contamination even when dressing is saturated with exudate).
 - (3) Supplied in sizes.
 - (a) 22 x 36 inches.
 - (b) 22 x 18 inches.
 - (4) Presents these advantages.
 - (a) Furnishes easy, rapid application.
 - (b) Can be stockpiled for civilian use in event of disaster.
 - (1) Is presterilized and
 - (2) Packaged in waterproof plastic.
 - c. Gauze dressings.
 - (1) Used to arrest hemorrhage during operative procedures.
 - (2) May be cut and folded to size from roll of gauze or from roller bandages.
 - 2. Improvised dressings.
 - a. Made from CLEAN toweling, handkerchiefs, sheets, etc.
 - b. Remember that less conventional materials may be used in extreme emergencies--cardboard, plastic.
 - c. Take PRECAUTIONS.
 - (1) Sterilize material if possible.
 - (a) Flame over match, gas flame, or open fire.
 - (b) Scorch with hot iron.
 - (2) Avoid further wound contamination by following general rules for treatment.

LESSON PLAN 8

- (3) Boil any instrument for 10 minutes before it is used to handle dressings.

II. Splints.

- A. Are implements for immobilizing fractured bone.
- B. Are designated by type and use.
 1. Fixation.
 - a. Used solely to immobilize or stabilize fractured bone.
 - b. May be improvised from any material which is
 - (1) Light, but rigid.
 - (2) Long enough to extend beyond the joints above and below the fracture.
 - (3) Broad enough to prevent pinching of bandaged limb.
 - (4) Sufficiently padded to protect part from undue pressure.
 2. Traction.
 - a. Used where there is sufficient muscle pull to displace bone fragments.
 - b. May be improvised.
 - (1) Must meet standards which apply for fixation splints.
 - (2) Items such as clothes pole or fence picket make good splints.

APPLICATION

- I. Demonstration given by the instructor using manikin.
 - A. Apply types of wound dressings regularly used by the military services.
 - B. Improvise compresses and bandages from materials not regularly issued (emphasize precautions).
 - C. Apply the four types of bandages described in the lesson.
 - D. Apply splints and improvised splints.
- II. Procedures practiced by the trainees as directed by the instructor.

SUMMARY

- I. Wound dressing.
 - A. Is any material used to cover or dress a wound.
 - B. Is used for purpose of hemorrhage control, prevention of further wound contamination, prevention of further injury to wound.
 - C. Is sterile (wet or dry) when possible.
 - D. Is made up of components--the compress and the bandage.
 - E. May be prepared and stored or may be improvised when needed.
- II. Splints.
 - A. Are implements for immobilizing fractured bone.
 - B. Are designated by type and use.

TITLE: THORACIC WOUNDSOBJECTIVES

- I. To familiarize the trainee with types of thoracic wounds.
- II. To instruct the trainee in treatment of thoracic wounds.

TRAINING AIDS

- I. Training film: Sucking Wounds of the Chest (MN-7477). Color, sound, 14 minutes.
- II. Manikin, Medical Department, U.S. Navy.
- III. Moulages.

REFERENCES

- I. Bowers, W. F., and Hughes, C. W. Surgical Philosophy in Mass Casualty Management. Springfield, Ill., Charles C Thomas, 1960.
- II. Emergency War Surgery, NATO Handbook (NavMed P-5059).
- III. Blades B. Management of injuries to the thorax. J.A.M.A. 159:419-21, 1 Oct. 1955.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. All thoracic wounds may lead to serious respiratory and circulatory disturbances.
 1. Compromised respiration results in inadequate oxygen intake.
 2. Oxygenation must be improved promptly.
 - B. Unattended thoracic injuries mean certain death.

PRESENTATION

- I. Types of thoracic wounds.
 - A. Superficial.
 - B. Nonpenetrating (crushed chest).
 1. Inspiration causes flaillike movement of chest wall.
 2. Mobile portion of the chest wall must be stabilized.
 - C. Perforating or penetrating.
 1. Casualty care is limited to lifesaving measures only.
 2. Intrathoracic hemorrhage control is not indicated at the casualty level.

II. Treatment of thoracic wounds.

A. Diagnostic procedures.

1. Examine casualty for wounds of entry and/or exit.
2. Observe any tears in clothing.
3. Inquire about location of pain.
4. Listen for sucking sound during inspiration.
5. Palpate for painful areas.

B. Syndrome--dyspnea; irregular, deep respiration; cyanosis; hemoptysis; pain in trauma area; frothy blood in trauma area; subcutaneous emphysema; flaillike movement of the chest wall.

C. Active treatment.

1. Prevent or relieve pneumothorax and/or mediastinal flutter.
 - a. Seal entry wound tightly.
 - (1) Accumulating air may cause lung collapse.
 - (2) Death may result from respiratory insufficiency.
 - b. Locate and seal any exit wounds.
 - c. For advanced sucking wounds with tension pneumothorax.
 - (1) Direct casualty to strain down.
 - (2) Momentarily uncover entry wound as air is expelled.
 - (3) Re-cover wound when lung comes into view.
 - d. Use any materials available to seal openings.
 - (1) Firmly apply sterile compress as pressure dressing.
 - (2) Cover dressing with any airtight material--adhesive tape, rubber, cellophane.
 - (3) Secure seal with battle dressing or bandage.
 - (4) Avoid passing bandage around the body to secure seal (may restrict respiratory function or aggravate undetected rib injuries).
 - e. Lift and stabilize crushed portion of chest.
 - (1) With towel clamps.
 - (2) With a blunt instrument inserted beneath the ribs.
2. Treat for shock but do not use shock position if contraindicated.
3. Position casualty comfortably on the injured side.
 - a. Blood and secretions will settle to injured side (secretions act to seal the wound).
 - b. Keep casualty quiet; avoid unnecessary handling (helps control hemorrhage in deep tissues and prevents further tissue damage).
 - c. Gravity favors uninjured lung.

D. Supporting treatment.

1. Maintain airway.
 - a. Clear breathing passages of blood and mucus to prevent strangulation.
 - b. Position casualty to aid respiration.
2. Give oxygen if available and necessary.
3. Control pain.
 - a. Tape chest snugly to prevent movement of rib fragments, but not tight enough to impair respiration.
 - b. Inject procaine to block intercostal nerves.
 - c. As a general rule do not administer morphine, BUT

- (1) If use is absolutely necessary to control pain, it may be given if one lung is not compromised.
- (2) Observe casualty closely and be prepared to institute pulmonary resuscitation measures if needed.
- (3) Latest syrette is 1 1/2 cc. of 1/4 gr. morphine tartrate.

E. Evacuation.

1. Give high priority consistent with the magnitude of the recovery situation to casualties with thoracic wounds.
2. High air evacuation, where there are great changes in atmospheric pressure, is not recommended.

APPLICATION

- I. Demonstration given by the instructor using manikin.
 - A. Illustrate proper casualty care of chest wounds.
 - B. Demonstrate approved positioning of casualty.
 - C. Emphasize precautions to be observed.

- II. Procedures practiced by the trainees as directed by the instructor.

SUMMARY

- I. Types of thoracic wounds.
 - A. Superficial.
 - B. Nonpenetrating (crushed chest).
 - C. Perforating or penetrating.
- II. Treatment of thoracic wounds.
 - A. Diagnostic procedures.
 - B. Syndrome--dyspnea; irregular, deep respiration; cyanosis; hemoptysis; pain in trauma area; frothy blood in trauma area; subcutaneous emphysema; flaillike movement of the chest wall.
 - C. Active treatment.
 - D. Supporting treatment.
 - E. Evacuation.

LESSON PLAN 10

TITLE: ABDOMINAL WOUNDS

OBJECTIVES

- I. To have the trainee learn the signs and symptoms of abdominal wounds.
- II. To instruct the trainee in the treatment of abdominal wounds.

TRAINING AIDS

- I. Training film: Penetrating Wounds of the Abdomen (MN-7470). Color, sound, 13 minutes.

LESSON PLAN 10

- II. Manikin, Medical Department, U.S. Navy.
- III. Moulages.
- IV. Battle dressings, large size.

REFERENCES

- I. Bowers, W. F., and Hughes, C. W. Surgical Philosophy in Mass Casualty Management. Springfield, Ill., Charles C Thomas, 1960.
- II. Emergency War Surgery, NATO Handbook (NavMed P-5059).

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. Emergency treatment can retard the morbid consequences of abdominal wounds.
 - B. Emergency casualty care and rapid evacuation improve the prognosis for casualties sustaining abdominal wounds.

PRESENTATION

- I. Signs and symptoms of abdominal wounds.
 - A. Obvious wound in abdominal wall; in back, chest, buttocks, or thigh.
 - B. Intense abdominal pain.
 - C. Nausea, vomiting.
 - D. Rigid abdominal muscles, revealed by palpation.
 - E. State of severe shock.
 - F. Visceral trauma may be caused by nonpenetrating agents.
- II. Treatment of abdominal wounds.
 - A. Active treatment.
 - 1. Keep casualty lying down with knees flexed (lessens pain and decreases tension on abdominal muscles).
 - 2. Remove large nonpenetrating debris BUT avoid removing penetrating objects or debris.
 - 3. Avoid handling viscera if possible.
 - 4. Do not replace viscera in cavity.
 - 5. Cover the wound.
 - a. Use sterile, loosely tied bandage, compress, or battle dressing.
 - (1) Keep moist with sterile saline solution.
 - (2) Use "clean" water if sterile moistening agents are unavailable.
 - b. Use snug abdominal binder to prevent further evisceration (avoid pressure to prevent intestinal contents from contaminating peritoneal cavity).

- B. Supporting treatment.
 - 1. Treat for shock.
 - 2. Give whole blood to maintain adequate blood volume.
 - 3. Administer moderate dose of morphine to control pain and intestinal peristalsis.
 - 4. Give nothing by mouth.
 - a. Perforated viscera may spill contents into peritoneal cavity.
 - b. Moisten lips with water in cases of extreme thirst.
 - 5. Estimate damage to structures within the abdominal cavity.
 - a. By color and nature of fluid extruded from wound.
 - b. By blood loss--amount, origin, presence in urine or feces.
- C. Evacuation as soon as possible.
 - 1. Give highest priority consistent with situation.
 - 2. Handle carefully to prevent further injury.

APPLICATION

- I. Demonstration given by the instructor using manikin.
 - A. Demonstrate active and supporting casualty care as outlined.
 - B. Emphasize precautions to be observed.
- II. Procedures practiced by the trainees as directed by the instructor.
- III. Training film shown (projector and film prepared in advance).
 - A. Prior to showing, indicate points to watch for.
 - B. After showing, question trainees on indicated points.

SUMMARY

- I. Signs and symptoms of abdominal wounds.
 - A. Obvious wound in abdominal wall; in back, chest, buttocks, or thigh.
 - B. Intense abdominal pain.
 - C. Nausea, vomiting.
 - D. Rigid abdominal muscles, revealed by palpation.
 - E. State of severe shock.
 - F. Visceral trauma may be caused by nonpenetrating agents.
- II. Treatment of abdominal wounds.
 - A. Active treatment.
 - B. Supporting treatment.
 - C. Evacuation as soon as possible.

LESSON PLAN 11

TITLE: HEAD AND NECK WOUNDS

OBJECTIVES

- I. To instruct the trainee in casualty management of head and neck injuries.
- II. To provide training in early definitive management of head injuries.

TRAINING AIDS

- I. Manikin, Medical Department, U.S. Navy.
- II. Casts, arch bars, wires, plaster bandages, Taylor and Crawford appliances, surgical equipment.

REFERENCES

- I. Emergency War Surgery, NATO Handbook (NavMed P-5059).
- II. Thoma, K. H. Oral Surgery, ed. 4. St. Louis, The C. V. Mosby Co., 1963.
- III. Kazanjian, V. H., and Converse, J. M. Surgical Treatment of Facial Injuries. Baltimore, The Williams and Wilkins Co., 1949.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. In a mass casualty situation, wounds of the head, face, and neck become surgical emergencies only when an obstructed airway, profuse hemorrhage, or shock endangers life.
 - B. Intracranial injuries, eye injuries, fractures of cervical vertebrae, and, to a lesser extent, maxillofacial injuries urgently require definitive management by specialists.
 - C. Both early casualty treatment and early definitive treatment of head and neck wounds should be considered by the dental officer.

PRESENTATION

- I. Casualty management of head and neck injuries.
 - A. Examine and diagnose as thoroughly as possible.
 - B. Provide an adequate airway.
 1. Wounds to the head or neck may cause obstruction of the airway.
 - a. A maxilla which is detached from its cranial base may drop over the tongue to occlude the bony airway.
 - b. In mandibular fractures the attachment of tongue to symphysis may be depressed.
 - (1) Muscles attached to hyoid bone are unsupported.

- (2) Hyoid bone drops backward.
 - (3) Unsupported tongue falls against posterior wall of pharynx and occludes air passageway.
 - c. In bilateral condylar fractures the mandible may be displaced posteriorly.
 - (1) Tongue may drop backward to obstruct larynx.
 - (2) Prevent asphyxia by providing adequate airway.
 - 2. Routine procedure to clear airway (protract the tongue).
 - a. Trendelenburg position, head to one side.
 - b. Place suture through tongue and provide forward traction.
 - c. Use gravity to keep the tongue forward.
 - (1) Place casualty in upright position.
 - (2) Flex head forward.
 - 3. Radical procedure to provide airway (perform cricothyroidotomy when other measures fail).
- C. Control hemorrhage.
- 1. By hemostat, ligature, or pressure.
 - 2. By nasal and/or postnasal packing when required.
 - 3. By early reduction and temporary splinting of fractured bones of the face.
- D. Prevent or treat shock.
- 1. Place in modified shock position with head and shoulders elevated.
 - 2. Keep casualty warm, quiet, and lying down.
 - 3. Relieve pain by sedation except in cases of suspected intracranial injury.
 - 4. Restore blood volume by infusions of whole blood or plasma volume expanders.
- E. Administer antitetanus therapy.
- II. Early definitive management of head injuries.
- A. Evaluate the casualty's general condition.
- 1. Neurologic signs of intracranial injury--restlessness; drowsiness; alterations in blood pressure, pulse rate, respiration.
 - 2. Manifestations of craniocerebral injury.
 - a. Cerebrospinal rhinorrhea.
 - b. Present or previous unconsciousness.
 - c. Paralysis of one or more of the cranial nerves--loss of vision in one or both eyes, diplopia, variation in pupil size.
 - d. Monoplegia, hemiplegia, or paraplegia.
 - e. Abnormal reflex reaction.
 - f. Bleeding from one or both ears, or Battle's sign.
 - g. Nausea or vomiting.
- B. Determine the total injury resulting from facial fractures.
- 1. Severe fractures of the maxilla and nasal bones may involve the cribriform plate of the ethmoid bone with injury to the dura.
 - 2. A blow on the chin which fractures the mandible may also cause fracture of the base of the skull.
 - a. Transmits force through the mandibular condyles.

- b. Drives condyles upward and backward through glenoid fossa to invade the middle cranial fossa.
 3. Early reduction of facial fractures accompanied by intracranial injury is the current method of choice.
 - a. Will usually stop cerebrospinal rhinorrhea.
 - b. Will check aural, nasal, and oral hemorrhage.
 - C. Perform as many concomitant operative procedures as the casualty's condition permits.
 1. Injuries that often require surgical care.
 - a. Fractures of the skull, spine, or extremities.
 - b. Wounds of the eye, chest, or abdomen.
 2. Minor procedures that can be accomplished without undue risk while the casualty still is under anesthesia.
 - a. Reduction of nasal or zygomatic fractures.
 - b. Primary suture of a lacerated eyelid or lip.
 - D. Estimate the extent of soft tissue damage.
 1. Injured muscles, vessels, and nerves around the eye rarely require immediate surgery.
 2. In most instances injury to areas surrounding the eye produces orbital edema.
 - a. Inflammation is communicated to the eye.
 - b. Reduce eyelid edema by use of cold applications.
 - E. Give **EMERGENCY TREATMENT ONLY** to eye injuries.
 1. Disruption as a result of direct missile violence.
 - a. Leave the decision to enucleate to a specialist--
ENUCLEATION ON THE BATTLEFIELD IS SELDOM NECESSARY.
 - b. Be alert for signs of further injury (subconjunctival hemorrhage sometimes indicates brain hemorrhage from a basal skull fracture).
 - c. Stanch hemorrhage by gentle compression.
 - d. Irrigate with normal saline solution at body temperature.
 - e. Remove loose foreign material.
 - f. Protect eyeball from further trauma and effects of exposure.
 - g. Cover with a bland oil, ophthalmic ointment, or vaseline-impregnated dressing.
 - h. Bandage both injured and uninjured eye to minimize eye movement if conditions do not preclude making a litter case of casualty.
 - i. **DO NOT BANDAGE BEFORE THOROUGH EXAMINATION HAS BEEN MADE.**
 - (1) Undiscovered foreign particles may be forced into the eye.
 - (2) Infection of the conjunctiva may be fostered.
 2. Burns of the eyelid and cornea.
 - a. Guard against **INFECTION**, corneal exposure, ectropion, ulceration, and perforation.
 - b. Cover burned area with bland oil or neutral salve.
 - c. Gently swab away burned skin and debris.
 - d. Treat the burn as on open wound, medicate with local chemotherapy and antibiotics.
 - e. Leave cosmetic defects for later specialized care.

- F. Determine location, nature, and extent of injuries not readily perceivable.
1. Early edema or hematoma may conceal changes in contour and make detection of facial fractures difficult.
 2. Roentgenographic examination is necessary for a complete, accurate diagnosis.
 3. Indications of maxillofacial injury revealed by palpation--pain, crepitus; loss of bony continuity.
 4. Indications of mandibular fracture or dislocation.
 - a. Loss of normal occlusion.
 - b. Trismus.
 - c. Deviation in condylar movement when mouth is opened.
 - (1) Toward injured side.
 - (2) Failure to rotate and glide forward (revealed by palpation through the external auditory canals).
 5. Indications of maxillary fracture or displacement.
 - a. Subconjunctival hemorrhage with ecchymosis and edema of the eyelids.
 - b. Loss of normal occlusion.
 6. Indications of zygomatic fracture.
 - a. Subconjunctival hemorrhage.
 - b. Trismus.
 - c. Changes in facial structure revealed by fullface examination.
 - (1) Stand behind the casualty.
 - (2) Palpate both zygomatic arches and both infraorbital ridges simultaneously for comparison.
 7. Indications of nasal fracture.
 - a. Subconjunctival hemorrhage.
 - b. Ecchymosis of the eyelids.
 - c. Change in nasal contour in relation to severity.
 - (1) Swollen soft tissues.
 - (2) Flattening or deviation, sometimes concealed by early edema or hematoma.
 - d. Fractures may be reduced soon after injury.
 - (1) Anesthetize locally.
 - (2) Place rubber- or cotton-covered elevator intranasally along lateral wall beneath fracture bones.
 - (3) Raise nasal arch until desirable contour is achieved.
 - (4) Provide additional support to comminuted fractures for a few days.
 - (a) To immobilize fragments in corrected position.
 - (b) Pack nasal cavity with petrolatum-gauze strips to provide early fixation.

APPLICATION

- I. Demonstration given by the instructor.
 - A. Demonstrate control of hemorrhage by use of instruments.
 - B. Use manikin to demonstrate diagnosis of injuries to the skull and soft tissues of the head.

LESSON PLAN 11

II. Procedures practiced by the trainees as directed by the instructor.

SUMMARY

- I. Casualty management of head and neck injuries.
 - A. Examine and diagnose as thoroughly as possible.
 - B. Provide an adequate airway.
 - C. Control hemorrhage.
 - D. Prevent or treat shock.
 - E. Administer antitetanus therapy.
- II. Early definitive management of head injuries.
 - A. Evaluate the casualty's general condition.
 - B. Determine the total injury resulting from facial fractures.
 - C. Perform as many concomitant operative procedures as the casualty's condition permits.
 - D. Estimate the extent of soft tissue damage.
 - E. Give EMERGENCY TREATMENT ONLY to eye injuries.
 - F. Determine location, nature, and extent of injuries not readily perceivable.

LESSON PLAN 12

TITLE: FRACTURES

OBJECTIVES

- I. To have the trainee learn to recognize the types of fractures.
- II. To enable the trainee to provide casualty treatment of fractures.

TRAINING AIDS

- I. Training films:
 - A. First Aid for Fractures. Introduction (MN-8184A). Color, sound, 14 minutes.
 - B. First Aid for Fractures. Skull, Spine and Pelvis (MN-8184B). Color, sound, 10 minutes.
 - C. First Aid for Fractures. The Triangular Arm Splint (MN-8184C). Black and white, sound, 6 minutes.
 - D. First Aid for Fractures. The Universal Leg Splint (MN-8184D). Black and white, sound, 4 minutes.
 - E. First Aid for Fractures. The Thomas Leg Splint (MN-8184E). Black and white, sound, 8 minutes.
- II. Manikin, Medical Department, U.S. Navy.
- III. Splints and materials for improvised splints.
- IV. Dressings in all available sizes.
- V. Chalkboard, chalk, and erasers.

REFERENCES

- I. Handbook of the Hospital Corps, United States Navy (NavMed P-5004).
- II. American National Red Cross. First Aid Textbook, ed. 4. Garden City, L.I., Doubleday and Company, Inc., 1957.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. The bones of the human skeleton give the body form, support its weight, protect its vital organs, and make mobility possible.
 - B. If any of the bones are broken, the fractured part may change shape, support may be lost, vital structures near the fractured bone may be injured, and mobility may be restricted.

PRESENTATION

- I. Recognition of the types of fractures.
 - A. Classification of fractures according to the effect on the surrounding soft tissue.
 1. An open fracture has a wound channel between fractured bone and body surface and may or may not have the bone protruding through the wound.
 2. A closed fracture has no break in the skin and has no external bleeding.
 - B. Classification of fractures according to the condition of the bone.
 1. A comminuted fracture has a shattered or splintered bone and has greatly damaged surrounding tissue.
 2. An impacted fracture has the segments of the broken bone lying adjacent to or overlapping each other.
 3. A greenstick fracture has some severed bone fibers and some intact bone fibers (incomplete bone separations).
 4. Transverse or spiral fracture has bone completely separated into two segments.
 - C. Signs of a fracture.
 1. A visible, bone-damaging wound accompanied by hemorrhage.
 2. A bone protruding through a wound.
 3. Any unusual characteristic found in bone-supported tissue.
 - a. Conduct an examination.
 - b. Determine if there is
 - (1) Pain, especially upon movement.
 - (2) Tenderness upon application of any pressure.
 - (3) Crepitus.
 - (4) Swelling and discoloration increasing with time.
 - (5) Loss of ability to use the fractured part.

- (6) Deformity.
- (7) Unnatural movement.

II. Providing casualty treatment for fractures.

- A. DO NOT MOVE THE CASUALTY BEFORE A SPLINT IS APPLIED.
- B. Control hemorrhage.
 - 1. A skillfully applied pressure bandage usually is adequate.
 - 2. For arterial bleeding that is otherwise uncontrollable,
 - a. Clamp and ligate the severed vessels.
 - b. Use a tourniquet, but AVOID PROMISCUOUS USE.
- C. Take steps to prevent infection.
 - 1. Dress wound.
 - 2. Do not aggravate the wound by using excessive pressure while applying the bandage.
- D. Immobilize the fracture and surrounding areas.
 - 1. Such a procedure is important to
 - a. Prevent further trauma.
 - b. Prevent further injury to blood vessels.
 - c. Limit the amount of pain and the effects of shock.
 - 2. Use manufactured or improvised splints such as,
 - a. Fixation splint.
 - (1) Board, sticks, or poles.
 - (2) Magazines.
 - (3) Preformed wire splints, wire mesh, or wire ladders.
 - b. Thomas traction splint for fractures of lower extremities.
 - (1) Do not create too much traction or cause pressure to be exerted on the foot with the appliance.
 - (2) Use adequate padding to spread pressure over a wide area.
- E. Treat casualty for shock.
- F. Relieve pain.
- G. Take precautions.
 - 1. Use splint on all fractures or suspected fractures.
 - 2. Fasten firmly with square knots all the materials used to secure splints to fractures.

APPLICATION

- I. Demonstration given by the instructor using manikin.
 - A. Illustrate procedures for treating an open fracture.
 - 1. Demonstrate hemorrhage control and emphasize the importance of it.
 - 2. Stress the importance of preventing infection.
 - B. Demonstrate the use of splints to immobilize open and closed fractures.
 - C. Stress precautions to be observed in the use of traction splints.
- II. Procedures practiced by the trainees as directed by the instructor.
- III. Training film shown.

SUMMARY

- I. Recognition of the types of fractures.
 - A. Classification of fractures according to the effect on the surrounding soft tissue.
 - B. Classification of fractures according to the condition of the bone.
 - C. Signs of a fracture.
- II. Providing casualty treatment for fractures.
 - A. DO NOT MOVE THE CASUALTY BEFORE A SPLINT IS APPLIED.
 - B. Control hemorrhage.
 - C. Take steps to prevent infection.
 - D. Immobilize the fracture and surrounding areas.
 - E. Treat casualty for shock.
 - F. Relieve pain.
 - G. Take precautions.

LESSON PLAN 13

TITLE: BURNSOBJECTIVES

- I. To have the trainee recognize the difficulties of meeting mass burn casualty demands.
- II. To have the trainee learn classification of burns.
- III. To instruct the trainee in the treatment of superficial burns.
- IV. To instruct the trainee in casualty treatment of deep burns.
- V. To have the trainee learn methods of definitive treatment.

TRAINING AIDS

- I. Training films:
 - A. First Aid for Burns (MN-8185). Color, sound, 22 minutes.
 - B. Management of Burns. Part 1, Supportive Care (PMF-5318). Color, sound, 18 minutes.
 - C. Management of Burns. Part 2, Local Care (PMF-5319). Color, sound, 15 minutes.
- II. Manikin, Medical Department, U.S. Navy.
- III. Universal Protective Dressings, fine-mesh gauze, bandages.
- IV. Chalkboard, chalk, and eraser.

REFERENCES

- I. Bowers, W. F., and Hughes, C. W. Surgical Philosophy in Mass Casualty Management. Springfield, Ill., Charles C Thomas, 1960.
- II. Emergency War Surgery, NATO Handbook (NavMed P-5059).
- III. Artz, C. P., and Soroff, H. S. Modern concepts in the treatment of burns. J.A.M.A. 159:411, 1 Oct. 1955.
- IV. Enyart, J. L. The U.S.S. Bennington Disaster. U.S. Armed Forces M. J., Oct. 1954.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. In the past, limited disasters have severely taxed all immediately available hospital facilities.
 1. Coconut Grove fire in Boston.
 2. U.S.S. Bennington explosion.
 - B. A simple exercise in mathematics may illustrate the importance of acquiring an ability to treat burns.
 1. Assume that under normal, ideal circumstances 7 trained persons are required to care for 1 seriously burned individual.
 2. An estimated 20 percent of a city's population will be seriously burned as a result of a thermonuclear explosion.
 3. How many trained workers will be needed to care for those seriously burned? (Compute for the immediate locality.)

PRESENTATION

- I. Recognize difficulties of meeting mass burn casualty demands.
 - A. Great number of burn casualties.
 1. Persons with little chance of survival--extensive and extreme burns, lethal doses of radiation.
 2. Those not seriously burned who will recover with little care.
 3. Those with a chance of useful survival if aided by all available facilities.
 - B. Shortage of parenteral fluids, dressings, medications, hospital facilities, transportation, and trained personnel.
 - C. Triage of burn casualties and concentration on care of those with a good chance for survival becomes an unpleasant necessity.
 - D. No one routine treatment can be applicable under casualty conditions; therapy must be modified for mass application.

II. Classification of burns.

A. According to cause.

1. Thermal.

a. Produced by direct heat--fire, scalds, explosion blasts.

b. Types.

(1) Flash burn.

(a) Result of direct thermal radiation (travels in straight line).

(b) Seriousness varies in proportion to proximity to blast.

(c) Light-colored clothing or other shielding material affords protection.

(2) Flame burn.

(a) From secondary fires caused by overturned stoves, broken gas lines, wood fires.

(b) From other fires induced by thermal blast waves of the explosion.

2. Chemical.

a. Produced by chemical action on tissue.

b. Resemble thermal burns.

3. Electrical.

a. Superficial.

(1) Produced by electric flash.

(2) Similar to thermal flash burn.

b. Deep.

(1) Produced by electric current.

(2) Small surface wound, extensive deep tissue destruction.

B. According to depth of damage (determined by heat intensity, exposure time).

1. First-degree.

a. Characteristic--reddening of the skin.

b. Heals in from 3 to 5 days.

2. Second-degree.

a. Characteristics.

(1) Blistering of the skin.

(2) Painfulness.

(3) Partial destruction of skin thickness.

b. Types.

(1) Superficial (heals in from 7 to 14 days).

(2) Deep (heals in from 2 to 4 weeks).

3. Third-degree.

a. Characteristics.

(1) Complete destruction of the skin.

(2) Charring and cooking of the deeper tissues.

b. Most serious burn.

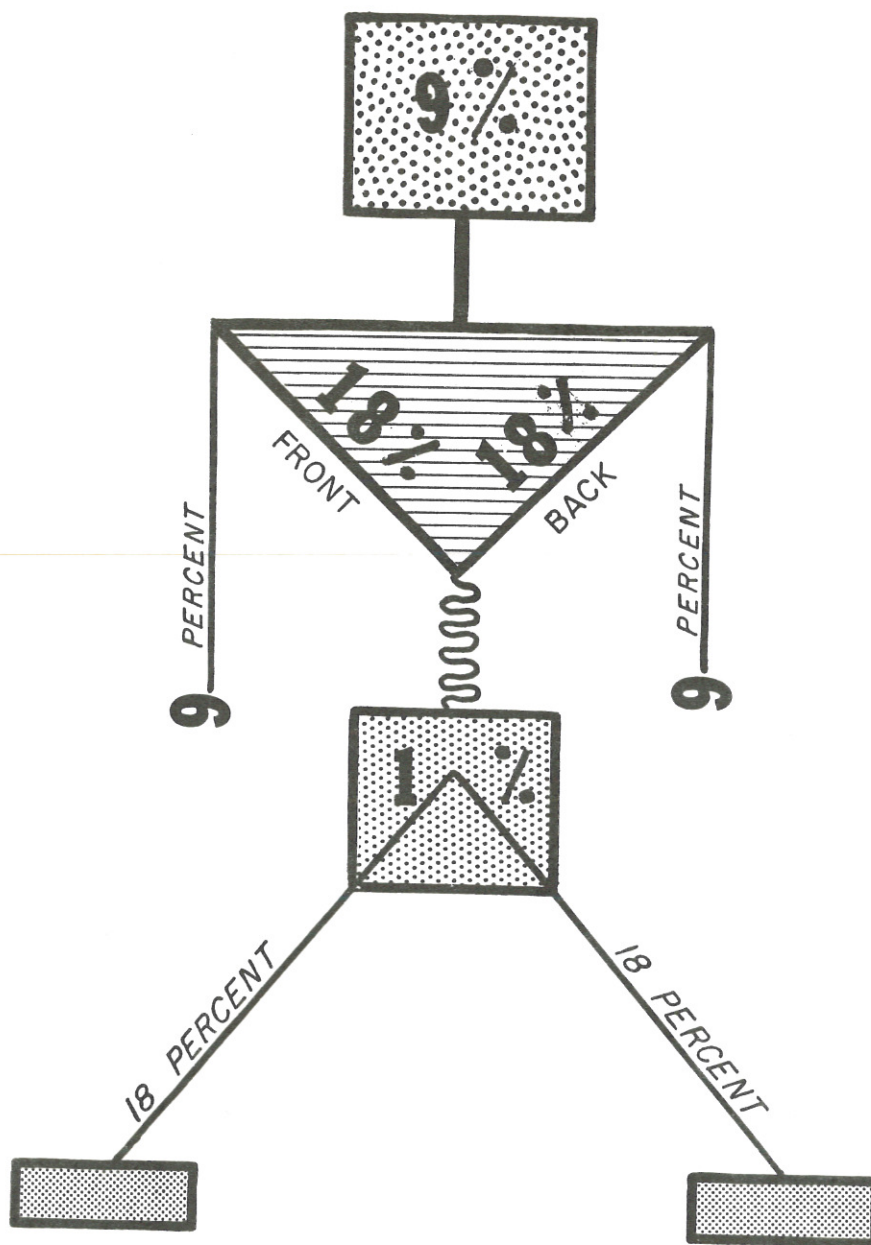
(1) Produces a deeper state of shock.

(2) Causes more permanent damage and disfigurement.

(3) Sensory nerve endings are destroyed; hence, is not painful.

C. According to extent of damage.

1. Determined by percentage of body surface involved.



2. "Rule of Nines" is method used to estimate (illustrate on chalkboard; use drawing on facing page as guide).
- D. For casualty treatment of mass casualties.
 1. Superficial.
 - a. First-degree burns.
 - b. Lesser second-degree burns needing little more than self-care.
 2. Deep (their treatment is primary consideration of this lecture).
 - a. More serious second-degree burns.
 - b. Third-degree burns.

- III. Treatment of superficial burns (to be undertaken if time and facilities permit).
- A. Cleanse with soap and water.
 - B. Break blisters.
 - C. Cut away detached tissue.
 - D. Apply a light dressing to protect against infection or mechanical trauma.

IV. Casualty treatment.

- A. Deep burns.
 1. Control burn shock.
 - a. Caused by continuous loss of body fluids with initial loss of red blood cells and simultaneous tissue damage.
 - (1) Caused by heat action.
 - (2) In proportion to size and degree of burn.
 - b. Presents subsequent loss of serum and plasma.
 - (1) Reduces effective circulating blood volume.
 - (2) Causes overconcentration of red blood cells.
 - c. Has constant absorption of toxic products from destroyed tissues.
 - d. Treatment of burn shock.
 - (1) Maintain body temperature.
 - (2) Protect casualty from cold, excessive heat, and rough handling.
 - (3) Administer fluids.
 - (a) Intravenously, especially if more than 20 percent of the body is burned.
 - (1) First, give plasma volume expander to restore circulating volume.
 - (2) Next, give whole blood to replace damaged cells if necessary.
 - (b) Orally.
 - (1) If fluids for transfusion are unavailable.
 - (2) If time does not permit intravenous transfusion.
 - (3) Introduce GRADUALLY.
 - (a) Frequent, small amounts of hot coffee, broth, or tea.
 - (b) Large quantities given too soon cause distention, nausea, and vomiting.
 - (4) When casualty can tolerate larger quantities.

- (a) Give a solution of 1 teaspoonful sodium citrate to 1 quart water.
 - (b) If sodium citrate is unavailable substitute 1 teaspoonful sodium bicarbonate.
- 2. Relieve pain.
 - a. Peripheral circulatory collapse may prevent rapid absorption of subcutaneously administered medicaments.
 - (1) Administer morphine, 1/8 gr., intravenously.
 - (2) If morphine is unavailable give aspirin and codeine or demerol, orally.
 - b. Superficial burns may be extremely painful even though nerve endings in the corium are destroyed.
 - (1) APPLY NO TOPICAL MEDICATION DURING EMERGENCY CARE.
 - (2) DO NOT USE TANNIC ACID (it may have a toxic effect on the liver).
- 3. Provide protection for the burned area.
 - a. Remove charred, soiled clothing.
 - b. Debride as necessary.
 - c. Apply a Universal Protective Dressing.
 - d. Leave the wound open and dry.
 - (1) When this is the treatment of choice.
 - (2) If there are no facilities for proper care.
- 4. Maintain an adequate airway.
 - a. Burns of the head and neck may cause airway obstruction.
 - b. Injury from inhalation of hot gases may impede respiration.
- 5. Prevent development of overlying wound infections.
 - a. Begin antibiotic therapy.
 - b. Give systemic antibiotics if they are available.
- 6. Elevate and immobilize the burned area.
- B. Extensive deep burns.
 - 1. Rapid evacuation for definitive treatment is greatest life-saving factor.
 - 2. Only minimal care should be given at casualty level.
 - a. Alleviate pain and control shock.
 - b. Remove debris and loose clothing that would irritate the wound during interim treatment and transportation.
 - (1) Take care not to contaminate the usually sterile burned area.
 - (2) Cut around cloth adhering to the burn and leave it for later removal.
 - c. In transit, keep casualty warm and in shock position.
- C. Burns complicated by other wounds.
 - 1. Cover with a Universal Protective Dressing.
 - 2. Evacuate for definitive treatment.
- V. Definitive treatment.
 - A. Remove remaining gross debris and constricting clothing.
 - B. Complete debridement if necessary.
 - C. Choose most desirable treatment procedure.
 - 1. Exposure method.
 - a. Definitely a hospital procedure.

- (1) Place casualty in room or ward that is relatively bacteria free.
- (2) Leave wound uncovered.
- (3) Sedate and give antibiotic therapy.
- (4) Elevate and immobilize burned area.
- (5) Turn casualty at regular intervals if burns are circumferential.
- (6) Replace fluids at a rate the same as the urinary output.
- b. Recovery is rapid.
 - (1) Serum exudate forms over burn during first 24 hours.
 - (2) Exudate begins to crust over in the next 24 hours.
 - (3) Crust is left undisturbed to desquamate normally.
2. Use of closed dressing method depends upon.
 - a. Availability of medical supplies and personnel.
 - b. Location, extent, and depth of burn.
 - c. Presence and severity of complicating injuries.
 - d. Environmental conditions.
3. Iced water method: Immerse injured part in iced water until free of pain upon withdrawal.

APPLICATION

- I. Demonstration given by the instructor using manikin.
 - A. Illustrate procedures for open and closed treatment of second- and third-degree burns.
 - B. Explain reasons for procedures as demonstration progresses.
- II. Procedures practiced by the trainees as directed by the instructor.
- III. Training film shown (projector and film prepared in advance).

SUMMARY

- I. Recognize difficulties of meeting mass burn casualty demands.
 - A. Presents great number of burn casualties.
 - B. Presents shortage of parenteral fluids, dressings, medications, hospital facilities, transportation, and trained personnel.
 - C. Triage of burn casualties and concentration on care of those with a good chance for survival becomes an unpleasant necessity.
 - D. No one routine treatment can be applicable under casualty conditions (therapy must be modified for mass application).
- II. Classification of burns.
 - A. According to cause.
 - B. According to depth of damage (determined by heat intensity, exposure time).
 - C. According to extent of damage.
 - D. For casualty treatment of mass casualties.
- III. Treatment of superficial burns (to be undertaken if time and facilities permit).

LESSON PLAN 13

- A. Cleanse with soap and water.
 - B. Break blisters.
 - C. Cut away detached tissue.
 - D. Apply a light dressing to protect against infection or mechanical trauma.
- IV. Casualty treatment.
- A. Deep burns.
 - B. Extensive deep burns.
 - C. Burns complicated by other wounds.
- V. Definitive treatment.
- A. Remove remaining gross debris and constricting clothing.
 - B. Complete debridement if necessary.
 - C. Choose most desirable treatment procedures.

LESSON PLAN 14

TITLE: PARENTERAL THERAPY

OBJECTIVES

- I. To help the trainee realize the importance of parenteral therapy.
- II. To instruct the trainee in venipuncture for administration of intravenous fluids.

TRAINING AIDS

- I. Training film: Venipuncture (MN-9375C). Color, sound, 7 minutes.
- II. Facsimile arm.
- III. Hypodermic syringes, with 18-, 19-, and 20-gage Luer-Lok needles.
- IV. Slides showing various stages of procedures.
- V. Chalkboard, chalk, and eraser.

REFERENCES

- I. Handbook of the Hospital Corps, United States Navy (NavMed P-5004).
- II. Emergency War Surgery, NATO Handbook (NavMed P-5059).
- III. American Medical Association, Council on Pharmacy and Chemistry. Fundamentals of Anesthesia, ed. 3. Philadelphia, W. B. Saunders Co., 1954.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. Training in venipuncture is necessary for intravenous injection of medicaments.
 - B. Trained personnel will be needed to teach venipuncture to emergency workers.

PRESENTATION

- I. Importance of parenteral therapy.
 - A. In a major disaster, members of the health services will be unable to care for all who need intravenous therapy.
 - B. Lives may depend on the intravenous administration of fluids or injection of medicaments.
 - C. Stockpiles of dextran, or other plasma volume expanders, are useless without trained personnel to administer them to casualties needing blood or blood substitutes.
- II. Venipuncture for administration of intravenous fluids.
 - A. Prepare intravenous solution.
 - 1. Open needle pack, remove airway needle, and insert into solution bottle.
 - 2. Remove protective cap from tip of drip regulator, insert tip into large depression of rubber stopper of solution bottle, and invert bottle.
 - 3. Hold tubing higher than bottle, remove cap from needle adapter, and open clamp.
 - 4. Slowly lower tubing, allow solution to run through tubing into a basin until tubing is filled with solution and all air bubbles are expelled.
 - 5. Attach needle and clamp tubing.
 - B. Decide on venipuncture site.
 - 1. Physical conditions may not allow use of the ideal location or procedures.
 - 2. Veins of the arm, hand, neck, leg, ankle, and foot may be used.
 - C. Use venipuncture procedure for intravenous administration.
 - 1. Apply tourniquet approximately 3 inches above proposed site.
 - 2. Immobilize appendage after applying tourniquet.
 - a. Position appendage comfortably on flat board.
 - b. Secure in place by tying with bandages above and below infusion site.
 - 3. Locate vein (palpate).
 - 4. Apply antiseptic on skin where needle insertion will be made.
 - 5. Insert needle at a 45° angle.
 - a. Insert toward the body always.
 - b. Hold the bevel UPWARD.

LESSON PLAN 14

- c. When the vein is small hold the bevel DOWNWARD.
- 6. Release tourniquet.
- D. Regulate flow of fluid.
 - 1. (Give rates for whole blood, plasma, and plasma volume expanders.)
 - 2. Maintain as rapid flow as possible until satisfactory blood pressure (100 mm/Hg) reading is obtained.
- E. Secure needle in place with adhesive (a wedge of gauze sponge may be needed to hold the needle at correct 45° angle of injection).

APPLICATION

- I. Demonstration given by the instructor.
 - A. Follow steps as explained in lesson.
 - B. Explain each step thoroughly as the demonstration proceeds.
 - C. Use applicable training aids for administration of intravenous fluids.
- II. Procedures practiced by the trainees.
 - A. Location of venipuncture sites on each other and application of a tourniquet.
 - B. Venipuncture on the facsimile arm.
 - C. If the class is far enough advanced, venipuncture on each other.
- III. Training film shown (projector and film prepared in advance).

SUMMARY

- I. Importance of parenteral therapy.
 - A. In a major disaster, members of the health services will be unable to care for all who need intravenous therapy.
 - B. Lives may depend on the intravenous administration of fluids or injection of medicaments.
 - C. Stockpiles of dextran, or other plasma volume expanders, are useless without trained personnel to administer them to casualties needing blood or blood substitutes.
- II. Venipuncture for administration of intravenous fluids.
 - A. Prepare intravenous solution.
 - B. Decide on venipuncture site.
 - C. Use venipuncture procedure for intravenous administration.
 - D. Regulate flow of fluid.
 - E. Secure needle in place with adhesive (a wedge of gauze sponge may be needed to hold the needle at correct 45° angle of injection).

TITLE: MEDICAMENTSOBJECTIVES

- I. To acquaint the trainee with medicaments administered during casualty treatment to relieve pain or discomfort.
- II. To acquaint the trainee with ways to improve physiologic conditions.

TRAINING AIDS

- I. Training films.
 - A. First Aid Use of Morphine (MN-8189). Color, sound, 20 minutes.
 - B. The Management of Shock with Polyvinyl Pyrrolidine. Color, sound, 40 minutes.
- II. Manikin, Medical Department, U.S. Navy.
- III. Facsimile arm.
- IV. Hypodermic syringes and needles.
 - A. 18-gage Luer-Lok needles.
 - B. 19-gage Luer-Lok needles.
 - C. 20-gage Luer-Lok needles.

REFERENCES

- I. Physicians' Desk Reference to Pharmaceutical Specialties and Biologicals, latest edition, Medical Economics, Inc. Oradell, N. J.
- II. American Dental Association. Council on Dental Therapeutics. Accepted Dental Remedies, latest edition, Chicago.
- III. U.S. Department of Health, Education and Welfare, Public Health Service. Therapeutic Guide for the Civil Defense Emergency Hospital Pharmaceuticals. Washington, U.S. Government Printing Office, 1964.
- IV. Handbook of the Hospital Corps, United States Navy (NavMed P-5004).

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. Medicaments are used to relieve pain and discomfort.
 - B. Barbiturates, opium alkaloids, and salicylates are valuable medicaments for emergency use.
 - C. Antiseptics, antibiotics, and plasma volume expanders are beneficial for improving physiologic conditions.

PRESENTATION

- I. Medicaments administered during casualty treatment to relieve pain or discomfort.
 - A. Barbiturates.
 1. Act on the nervous system.
 2. Have systemic effects.
 - a. Depress the central nervous system.
 - b. Are sedative and hypnotic to varying degrees.
 3. Types favored for emergency use.
 - a. For heightened nervous excitement.
 - (1) Administer phenobarbital, 1/2 gr.
 - (2) Give two or three times a day.
 - b. For nausea and vomiting caused by psychic shock.
 - (1) Administer phenobarbital, 1/2 gr., or pentobarbital sodium, 1 1/2 gr.
 - (2) Give two or three times a day.
 - c. As a preliminary agent for or adjunct to local anesthesia.
 - (1) Administer pentobarbital sodium, 1 1/2 gr., or
 - (2) Use secobarbital sodium, 1 1/2 gr.
 - B. Opium alkaloids.
 1. Depress the respiratory system.
 2. Types of opium alkaloids.
 - a. Morphine.
 - (1) Has unique power to relieve pain, allay fear, and induce euphoria.
 - (2) Use PRECAUTIONS.
 - (a) Do not use unless extreme pain is a contributing factor.
 - (b) Do not use if the casualty has head wounds.
 - (c) Do not use when the casualty is in shock.
 - (d) If chest wound is unilateral, careful, judicious use of morphine is indicated.
 - (e) NEVER GIVE MORPHINE TO THE "WALKING WOUNDED" IN THE FIELD. The effects of the drug may cause them to go to sleep and thereby prevent them from walking to a station to receive care for their wounds.
- (3) Know dosages.
 - (a) Maximum single dose--1/4 gr.
 - (1) Is the amount contained in syrettes supplied in the Armed Forces field kits (1.5 cc. syrette contains 1/4 gr. morphine tartrate, which is equivalent to 1/8 gr. morphine sulfate).
 - (2) Exceeds the requirements for the maximum analgesic effect.
 - (b) Effective single dose--1/8 to 1/6 gr.
 - (c) Small doses, supplemented with barbiturates, are usually much more effective than large doses.
- (4) Know method of administration.
 - (a) Administer intravenously or intramuscularly.

- (b) If there is no syringe available, place 1/4-gr. tablet under the tongue.
- b. Codeine.
 - (1) Has one-sixth the analgesic power of morphine.
 - (2) Has one-fourth the depressant effect of morphine.
 - (3) Combine codeine sulfate (1/2 gr.) with an analgesic such as aspirin (10 gr.) to
 - (a) Sedate the coughs of casualties with chest wounds.
 - (b) Relieve minor pain.
- C. Salicylates.
 - 1. Are analgesic and antipyretic.
 - 2. Acetylsalicylic acid is a salicylate.
 - a. Known by common names such as aspirin or APC.
 - b. Is not too effective medicinally.
 - 3. Are excellent palliative agents in time of emergency or stress.
- D. Anesthetics.
 - 1. Depress the nervous system.
 - 2. Types of anesthetics.
 - a. Local.
 - (1) Procaine or lidocaine hydrochloride, 2 percent solution.
 - (a) Inject, using local infiltration or block.
 - (b) Administer with minimum disturbance to body functions.
 - (2) **Tetracaine** hydrochloride, 0.5 percent solution.
 - (a) Is a topical anesthetic useful on mucous membranes or eye surfaces.
 - (b) Is provided in many emergency treatment kits.
 - b. General.
 - (1) Ethyl ether.
 - (a) Is considered by many authorities the most practical general anesthetic to use during an emergency.
 - (b) Is relatively safe but does have several disadvantages.
 - (1) Irritates the mucous membrane in high concentrations.
 - (2) Is highly flammable in air or oxygen.
 - (3) Deteriorates over a long period if it is not properly stored.
 - (2) Thiopental sodium.
 - (a) Is used in 1 to 2 percent solution.
 - (b) Is administered by injection.
 - (1) Inject 2 to 4 cc. initially.
 - (2) Pause to ascertain casualty's reaction.
 - (3) Inject 0.25 to 1 cc. per minute until a total of 8 to 10 cc. has been administered.

LESSON PLAN 15

II. Ways to improve physiologic conditions.

A. Antiseptics.

1. Are used to prevent infection.
2. Types of antiseptics.
 - a. Soap and water.
 - (1) Reduces the number of bacteria.
 - (2) Reduces the probability of infection.
 - b. Heat sterilization.
 - (1) Is the most prevalently used "antiseptic" for emergencies.
 - (2) Methods for use, in order of effectiveness.
 - (a) Autoclaving, or steam under pressure.
 - (b) Boiling.
 - (c) Dry heat (temperatures of 350° to 400° F.).
 - (d) Open flame.

B. Antibiotics.

1. Combat infection.
2. Are products of living microorganisms which kill or inhibit the growth of other microorganisms.
3. Have a highly selective bacteriostatic action.
4. Tetracycline and/or oxytetracycline are the antibiotics of choice in mass casualty situations.
 - a. Are broad spectrum antibiotics.
 - b. Have indefinite shelf life.
 - c. Ease of administration.
 - e. Usual dosage - 250 mg. four times a day.
5. Penicillin is one type of antibiotic.
 - a. Is invaluable as a combatant of infection.
 - b. Is administered
 - (1) Orally in 1,500,000 units.
 - (2) Parenterally in 600,000 units.

C. Plasma volume expanders.

1. Increase blood volume.
2. Are macrocellular colloids.
 - a. Penetrate the living membranes with difficulty.
 - b. Remain in the bloodstream and "expand" the volume of blood.
3. Were developed as substitutes for whole blood.
 - a. Because whole blood cannot be stored for long periods.
 - b. Because plasma volume expanders can be stockpiled for use in mass casualty situations.
4. Types of expanders.
 - a. Plasma.
 - b. Dextran.
 - (1) Preferred for treatment of traumatic, neurogenic, or burn shock.
 - (2) Always administered intravenously.
 - (3) Infused at the rate of 20 to 40 cc. per minute.

APPLICATION

- I. Demonstration given by the instructor.

- A. Show the procedures for administering morphine intramuscularly.
 - 1. Use a syrette from the emergency kit and a facsimile arm or a manikin.
 - 2. Emphasize the precautions which must be taken.
 - 3. Illustrate the method of indicating that the casualty has been given morphine.
 - a. Mark "M" on forehead.
 - b. Mark time of administration.
- B. Show the procedures for administering medicaments intravenously.

II. Procedures practiced by trainees as directed by the instructor.

SUMMARY

- I. Medicaments administered during casualty treatment to relieve pain or discomfort.
 - A. Barbiturates.
 - B. Opium alkaloids.
 - C. Salicylates.
 - D. Anesthetics.
- II. Ways to improve physiologic conditions.
 - A. Antiseptics.
 - B. Antibiotics.
 - C. Plasma volume expanders.

TITLE: RADIATION INJURY AND BACTERIAL AND CHEMICAL WARFARE

OBJECTIVES

- I. To acquaint the trainee with basic nuclear radiation theories.
- II. To familiarize the trainee with symptoms of radiation sickness.
- III. To refer the trainee to material on bacterial and chemical warfare.

TRAINING AIDS

Training films:

- A. Medical Aspects of Nuclear Radiation (MA-7405). Color, sound, 20 minutes.
- B. Fundamentals of Radiac Instruments (MA-8442). Black and white, sound, 25 minutes.
- C. Medical Defense Against Biological Warfare. Basic Plan After Attack (MN-8549C). Color, sound, 20 minutes.
- D. Nerve Gases. Part 1, Field Recognition and Self-Aid Procedure (MA-8882A). Black and white, sound, 27 minutes.
- E. Medical Defense Against Chemical Warfare. Gas Attack--Self Aid (MN-8266D2). Black and white, sound, 13 minutes.

LESSON PLAN 16

F. Medical Defense Against Chemical Warfare. Principles of First Aid (MN-8266E2). Black and white, sound, 17 minutes.

REFERENCES

- I. Radiation Health Protection Manual (NavMed P-5055).
- II. The Effects of Nuclear Weapons. Glasstone, S., ed., Department of Defense, Atomic Energy Commission, April 1962.
- III. ABC Warfare Defense (NavPers 10099).
- IV. Conard, R. A., et al. Skin Lesions, Epilation, and Nail Pigmentation in Marshallese and Americans Accidentally Contaminated with Radioactive Fallout. Research Report, Project NM 006012.04.82. Naval Medical Research Institute, Aug. 1955.
- V. Cronkite, E. P. Atomic Warfare Medicine. U.S. Naval Institute Proceedings, Sept. 1951.
- VI. Ibid.: Radiation Illness. Its Pathogenesis and Therapy. ch. X, Atomic Medicine. C. F. Behrens, ed., New York, Thomas Nelson and Sons, 1949.
- VII. Department of Defense, Office of Civil Defense. Fallout Protection. H - 6., Dec. 1961.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. An ability to recognize early signs of radiation sickness will aid in the proper triage of casualties under disaster conditions.
 - B. Internal radiation injuries from contaminated air, food, and water must be recognized.
 - C. Special procedures must be followed and special precautions observed in a fallout area. Variations in fallout due to weather conditions must be recognized and procedures modified accordingly.

PRESENTATION

- I. Basic nuclear radiation theories.
 - A. Results of an atomic explosion.
 1. Blast.
 2. Heat.
 3. Nuclear radiation.
 - a. Initial effect.
 - (1) Chief protection is distance.

- (2) If blast and heat do not harm, neither will initial radiation.
- (3) Components.
 - (a) Alpha and beta particles.
 - (1) Penetrate poorly.
 - (2) Effectively stopped by paper or clothing.
 - (3) Danger in prolonged contact of beta particles with skin.
 - (4) Damaging ionization may occur if alpha and beta particles enter body through open wounds, eating, or breathing.
 - (b) Gamma rays.
 - (1) Greatest destructive force in direct radiation.
 - (2) Extremely penetrating.
 - (3) Necessitate good protective shielding--metal (lead or iron), cement, soil.
 - (c) Neutrons.
 - (1) Similar to gamma rays in penetration and damage.
 - (2) Require similar shielding as gamma rays.
- b. Residual (fallout).
 - (1) Cloud of radioactive particles.
 - (a) Produced by surface burst.
 - (b) May be carried for some distance.
 - (c) May settle on and contaminate buildings, people.
 - (2) Contact with the human body makes residual radiation a problem.
 - (a) Alpha particles have little penetrating power.
 - (b) Beta particles can cause skin lesions.
 - (1) Depending upon the amount of fallout in direct contact.
 - (2) Depending upon the lapse of time between the blast and the contaminating contact.

B. Variations in radiation.

- 1. According to degree of contact with earth's surface.
 - a. Air burst.
 - (1) Large amount of immediate direct radiation.
 - (2) Little or no residual radiation.
 - b. Subsurface blast.
 - (1) Less direct radiation.
 - (2) More residual radiation.
 - c. Surface blast.
 - (1) Less effective direct radiation.
 - (2) More residual radiation from debris lifted into the column of air resulting from such a blast.
 - d. Underwater burst.
 - (1) Less direct radiation.
 - (2) Large amount of residual radiation from material contained in the resultant air column.
- 2. According to weather conditions.
 - a. Clouds or rain decreases the amount of direct radiation.

LESSON PLAN 16

- b. Wind direction and velocity cause variations in area, direction, and extent of radioactive fallout.
 - 3. According to time lapse.
 - C. Radiation detection.
 - 1. Important consideration in disaster planning.
 - 2. Many methods have been suggested.
 - a. Individual personal dosimeters.
 - (1) Pocket dosimeter-ion chamber.
 - (2) Glass dosimeter-phosphor glass.
 - (3) Film badge-photographic film.
 - b. Some disadvantages of individual dosimeters.
 - (1) Difficulty in persuading people to wear them.
 - (2) Not accurate.
 - (3) Interpretation of reading may mislead.
- II. Radiation sickness.
 - A. Diagnosis.
 - 1. Early signs and symptoms.
 - a. Vomiting.
 - (1) The day after the blast.
 - (2) The heavier the radiation dosage, the sooner vomiting begins.
 - b. Itching skin.
 - c. Burning eyes.
 - d. Tingling of exposed parts.
 - 2. Location of casualty in relation to the source of radiation.
 - B. Treatment.
 - 1. Display of symptoms determines whether casualty must be treated for radiation sickness.
 - 2. Centers will be set up to give definitive treatment.
 - a. Whole blood.
 - b. Antibiotics.
 - c. Nourishing food.
- III. Material on bacterial and chemical warfare.
 - A. Reference material is ABC Warfare Defense (NavPers 10099).
 - B. Training aids.
 - 1. Medical Defense Against Biological Warfare. Basic Plan After Attack (MN-8549C).
 - 2. Nerve Gases. Part 1, Field Recognition and Self-Aid Procedures (MA-8882A).
 - 3. Medical Defense Against Chemical Warfare. Gas Attack--Self Aid (MN-8266D2).
 - 4. Medical Defense Against Chemical Warfare. Principles of First Aid (MN-8266E2).

SUMMARY

- I. Basic nuclear radiation theories.
 - A. Results of an atomic explosion.
 - B. Variations in radiation.
 - C. Radiation detection.

- II. Symptoms of radiation sickness.
 - A. Diagnosis.
 - B. Treatment.
- III. Material on bacterial and chemical warfare.
 - A. Reference material is ABC Warfare Defense (NavPers 10099).
 - B. Training aids.

TITLE: PSYCHOLOGICAL FIRST AID

OBJECTIVES

- I. To inform the trainee of the most common psychological reactions to disaster.
- II. To have the trainee develop an understanding of some of the basic principles for helping the emotionally disturbed.
- III. To offer the trainee some practical suggestions for applying the basic principles of psychological first aid.

TRAINING AID

Training film: Combat Psychiatry. The Battalion Medical Officer (MN-7499A). Black and white, sound, 36 minutes.

REFERENCE

Psychological First Aid in Community Disasters (NavMed P-5037).

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. In all disasters, whether they result from the forces of nature or from enemy attack, the people involved may have quite different reactions from their usual behavior.
 - B. It is vital for disaster workers to have some familiarity with common patterns of reaction to unusual emotional stress and strain.
 - C. The principles described here are widely applicable to any community disaster and understanding of them is essential for those who are to help the victims of floods, fires, tornadoes, and other natural catastrophes.
 - D. Awareness of certain psychological facts will greatly simplify care of disaster victims.

PRESENTATION

- I. Common psychological reactions to disaster.

LESSON PLAN 17

- A. Vary in proportion to nature and magnitude of the disaster.
- B. May be separated into five categories for clarity.
 - 1. Normal reactions.
 - a. Remarkable calmness.
 - b. Transitory reactions.
 - (1) Profuse perspiration.
 - (2) Trembling.
 - (3) Temporary weakness and nausea.
 - (4) Difficulty in thinking clearly for a time.
 - c. Swift recovery of composure.
 - 2. Individual panic.
 - a. Unreasoning attempt to flee supplants judgment.
 - (1) Notoriously contagious.
 - (2) A few individuals in blind flight can precipitate mass headlong flight.
 - (a) Disasters at sea--overcrowded lifeboats stormed by terrified passengers who seem unaware of partly filled boats nearby.
 - (b) Theater fires--single exit stampeded with other obvious exits available.
 - b. Pointless physical activity.
 - (1) Uncontrolled weeping.
 - (2) Wild running about.
 - (3) Causes.
 - (a) Avenues of escape are threatened, or believed to be, by progression of danger.
 - (b) Horror at the appearance of gruesomely mutilated loved ones, especially if little or no personal injury has been sustained.
 - c. Rapid, orderly effort to escape a perilous situation is no sign of panic.
 - (1) When source of danger is real.
 - (2) If no useful purpose can be served by remaining.
 - 3. Depression.
 - a. Withdrawal.
 - b. Vacant gaze.
 - c. Disinclination to communicate.
 - d. Apparent complete unawareness of the situation.
 - e. Lack of emotional reaction.
 - f. Inability to initiate action or assume responsibility.
 - (1) For self.
 - (2) For group.
 - 4. Overactivity.
 - a. Rapid talk.
 - b. Inappropriate jokes.
 - c. Activity which at first seems purposeful later is recognized as pointless.
 - d. Inability to resist distraction.
 - e. Suggestions and demands of little real value.
 - f. Exaggerated confidence in own abilities.
 - (1) Causes intolerance of others' ideas.
 - (2) Can become a nucleus of opposition to sound procedures.

5. Bodily reactions.

a. Normal temporary responses to unusual stress.

(1) Do not interfere with ability to act constructively in a difficult situation.

(2) May not appear until the danger has been met and surmounted.

b. Sustained, disabling reaction.

(1) Severe nausea and vomiting.

(a) May result from exposure to warfare agents.

(b) Emotional reaction of unexposed individuals.

(2) Conversion hysteria.

(a) Unconscious conversion of anxiety into belief that some part of the body has ceased to function.

(1) Hearing, speech, or sight may be lost.

(2) Feeling or power may disappear from one or more limbs.

(b) Reduces the previously overwhelming anxiety.

(c) Complaints should not be considered malingering.

(1) Casualties are unaware that no physical basis for their condition exists.

(2) Disability is as real to them as physical injury.

C. May show features of more than one category, either simultaneously or in successive stages.

D. Must be dealt with differently, according to manifestations.

II. Basic principles for helping the emotionally disturbed.

A. Accept each casualty's right to have his own feelings.

1. Avoid blaming or ridiculing.

2. Help to relieve tensions which contributed to reaction.

a. Encourage him to talk of his experiences.

b. Find out if he is concerned about family or friends.

3. Seek to see the situation from his point of view.

a. Be warmly interested, not enveloping or maudlin.

b. Attempt to understand (may be just the aid needed).

B. Accept a casualty's limitations as real.

1. Guard against tendency to resent intangible disabilities.

2. Feelings of incompetence or overconfidence are disabling.

C. Evaluate a casualty's potentialities.

1. Question him for clues to his basic abilities, interests, and normal occupation.

a. Treat him as a potentially valuable member of your disaster team.

b. Show respect for him as sincerely as you can.

2. Help to find a way to utilize his skills as quickly as possible.

a. Manually skilled can straighten the immediate area.

b. Clerically skilled may assist in simple jobs involving messages or records.

3. Work can serve as first step back to normalcy.

- D. Accept your own limitations.
 - 1. Establish priorities about what you will undertake, according to your strength and skill.
 - a. Your assigned job.
 - b. Jobs assigned to others who are themselves casualties.
 - c. Other jobs within the limits of your capacities.
 - 2. Appraise yourself candidly.
 - a. Expect some disruption under stress of your psychological defenses.
 - (1) Personal anxieties.
 - (2) Frustration at imperfections in recovery operations.
 - (3) Fatigue.
 - b. Know your weaknesses well.
 - (1) Impulsiveness.
 - (2) Irritability.
 - (3) Sensitiveness to criticism.
 - (4) Proneness to prejudice.
 - (5) Malice.
 - c. Learn to modify your emotional reactions promptly.
 - (1) Your "emotional wounds" will deter your service to others with emotional difficulties.
 - (2) Knowledge, training, and experience as a disaster worker can serve to protect.

III. Applying the basic principles of psychological first aid.

- A. Only experience can teach the value of the principles.
- B. Course of individual reactions will make clear who is in need of aid.
 - 1. Loss of control may be delayed.
 - 2. Progress in regaining composure may be slow.
- C. Normal reaction (little or no help needed).
- D. Individual panic.
 - 1. Will respond least to application of principles.
 - 2. Early segregation is urgent.
 - a. Gaining attention will be difficult.
 - b. Behavior will be disturbing to all.
 - c. May precipitate a state of general panic.
 - 3. Method of control depends upon facilities available.
 - a. Try gentle firmness first.
 - b. If necessary enlist aid to help transport casualties to the nearest operating aid station.
 - c. If workers are isolated from all medical facilities.
 - (1) Ask two or three fellow workers to remain with the casualty until help arrives.
 - (2) Physical restraint may be necessary.
 - (a) Firm but not brutal or punitive.
 - (b) Abusive tactics usually fail, also increase group anxieties.
 - d. Prompt control of panic discourages its spread.
 - E. Depressed reactions.
 - 1. Most likely to respond as desired to methods suggested.
 - a. Constructive interest.

- b. Encouragement to undertake simple, routine jobs.
 - 2. Elderly people and children present special problems.
 - a. Described methods will be reasonably effective.
 - b. Older persons become more confused than younger people and respond more slowly and not as well to care.
 - c. Children's reactions reflect attitudes of adults and calm, realistic assurances help them recover equanimity.
 - d. Both the aged and children should be given as much quiet supervision as possible after a disaster.
- F. Overactive responses.
 - 1. First task will be to gain attention.
 - 2. Contact can be established.
 - 3. These individuals can regain composure under proper supervision.
 - 4. Excess energies will create great need for physical activity.
 - a. Can cause serious trouble by "scapegoating."
 - (1) Criticizing the general stupidity of authority.
 - (2) Blaming a particular person or group for the disaster.
 - (3) Attitudes can be extremely contagious.
 - b. Encourage their participation in cleaning up rubble or engaging in rescue operations.
 - (1) Explain the need for immediate repair of damage.
 - (2) Make clear that responsibility can be fixed later.
- G. Bodily reactions.
 - 1. Immediate relief of disturbances will probably be impossible.
 - 2. Calmness and a display of interest will help.
 - 3. Encourage bypassing of disability as much as possible.
 - a. Find small jobs that can be done in spite of symptoms.
 - b. Help the casualties to regain their composure while awaiting medical attention.
- H. Use of sedatives.
 - 1. Administer sedatives only as a last resort.
 - a. Add to the psychological casualty's confusion.
 - b. Make approved treatment methods less effective.
 - c. Often large, dangerous doses are required for desired effect.
 - d. Paradoxical responses are not uncommon.
 - 2. If the use of sedatives is unavoidable, tag casualty to prevent fatal overdosage.
 - a. Record of any medicine given.
 - b. Time medicine was administered.
- I. Dealing with casualties who do not respond.
 - 1. Panicky individuals should receive trained, specialized care promptly.
 - 2. Sufferers from depression and with severe bodily reactions are less urgent cases.
 - a. May receive group therapy temporarily.
 - b. Should also receive medical care.
 - c. Physical needs should be met while these casualties wait.
 - 3. Overactive individuals must be tolerated until they disrupt the work of others.
 - a. Try to persuade them to join those awaiting medical attention.

- b. If diplomacy fails, restraint may be necessary.
- J. Mass reaction may become a serious burden in any disaster.
 - 1. Control of disturbed groups requires leadership techniques beyond those required for control of disturbed individuals.
 - 2. Learning and applying principles of psychological first aid will contribute to the prevention of crowd activity.
 - a. Successful restriction of the influence of one panicky person.
 - b. Deft control of an overactive, resentful person.
 - 3. Avoidance of mob activity is the best control.

APPLICATION

Conduct class discussion.

SUMMARY

- I. Common psychological reactions to disaster.
 - A. Vary in proportion to nature and magnitude of the disaster.
 - B. May be separated into five categories for clarity.
 - C. May show features of more than one category, either simultaneously or in successive stages.
 - D. Must be dealt with differently, according to manifestations.
- II. Basic principles for helping the emotionally disturbed.
 - A. Accept each casualty's right to have his own feelings.
 - B. Accept a casualty's limitations as real.
 - C. Evaluate a casualty's potentialities.
 - D. Accept your own limitations.
- III. Application of psychological first aid principles.
 - A. Only experience can teach the value of the principles.
 - B. Course of individual reactions will make clear who is in need of aid.
 - C. Normal reaction (little or no help needed).
 - D. Individual panic.
 - E. Depressed reactions.
 - F. Overactive responses.
 - G. Bodily reactions.
 - H. Use of sedatives.
 - I. Dealing with casualties who do not respond.
 - J. Mass reaction may become a serious burden in any disaster.

TITLE: TRANSPORTATION OF CASUALTIESOBJECTIVES

- I. To teach the trainee the procedures used and precautions followed for the initial transportation of casualties.
- II. To acquaint the trainee with concepts and methods of further evacuation of casualties.

TRAINING AIDS

- I. Training films:
 - A. Transportation and Evacuation of Casualties in a Marine Division (MN-7334). Black and white, sound, 17 minutes.
 - B. First Aid Handling and Transporting of the Injured. Basic Techniques (MN-8187B). Black and white, sound, 25 minutes.
 - C. First Aid Handling and Transporting of the Injured. Stretcher Carriers (MN-8187C). Black and white, sound, 15 minutes.
- II. Stokes stretcher.
- III. Non-Traumatic Carrier.
- IV. Army litter.
- V. Materials from which litters can be improvised, such as poles, coats, and blankets.

REFERENCES

- I. Standard First Aid Training Course (NavPers 10081-A).
- II. First Aid and Emergency Procedures. Handbook of the Hospital Corps (NavMed P-5004).
- III. Emergency War Surgery, NATO Handbook (NavMed P-5059).
- IV. Young, C. B. First Aid and Resuscitation. Springfield, Ill., Charles C Thomas, 1954.
- V. U.S. Federal Civil Defense Administration. Organization and Operation of Civil Defense Casualty Services (TM-11-1). Washington, U.S. Government Printing Office, 1953.
- VI. Everhand, T. P. Emergency care of atomic bomb casualties, part IV. First aid and transportation of the wounded. Philadelphia Med. 46:661, 30 Dec. 1950.

INTRODUCTION

- I. Introduce yourself.

LESSON PLAN 18

- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. Proper casualty transportation is an essential part of the emergency treatment.
 - 1. Links the emergency treatment performed to later definitive treatment.
 - 2. Guards against further injury which may be caused by an over-looked and unsplinted fracture.
 - B. Plans worked up on paper have little value if they cannot be applied in a practical, well-organized way.
 - 1. Use basic principles and common sense to avoid or overcome unforeseen complications and hazards.
 - 2. Remember that many who would be litter cases in conventional disasters will be forced to move about and care for themselves.

PRESENTATION

- I. Procedures used and precautions followed for the initial transportation of casualties.
 - A. Use caution in moving a casualty onto the litter at the site of the accident.
 - 1. Remember that this first move--the shortest trip the casualty makes--may be the determining survival factor.
 - 2. Position from 3 to 5 persons on each side of the casualty.
 - 3. Lift the casualty in unison.
 - 4. Handle the casualty so that the good accomplished by skillful treatment at the scene of the disaster will not be undone and existing injuries will not be compounded.
 - B. Be aware of the use the special positions used for specific wounds.
 - 1. Elevate the knees in the presence of abdominal injuries.
 - 2. Elevate the head in the presence of chest injuries.
 - 3. Use a prone position instead of a supine position for pharyngeal injuries.
 - C. Designate someone to remain in constant attendance during transportation to perform needed duties.
 - 1. Ensure comfort.
 - 2. Prevent complications from developing.
 - 3. Provide proper support.
 - 4. Maintain bandages and splints.
 - 5. Provide sedation as needed.
 - 6. Assist the vomiting casualty.
 - 7. Keep airways open.
 - 8. Keep blankets over and under the casualty.
 - 9. Maintain parenteral therapy as required.
 - 10. Reassure the casualty.
- II. Concepts and methods of further evacuation of casualties.
 - A. Need of immediate hospitalization for the casualty was revealed by statistics of World War II.

1. Casualties with abdominal wounds who received hospital treatment from 1 to 2 hours after their injury had a survival rate of 90 percent.
2. Where hospitalization was delayed 6 to 8 hours casualties had a survival rate of only 60 percent.
3. Present concept for use of tourniquets is based on the premise of rapid evacuation and prompt, adequate treatment. Once a tourniquet is applied as final field treatment, it is not loosened until definitive care is possible.
- B. Use of high altitude evacuation is contraindicated for casualties with head or chest injuries.
 1. Is not used if oxygen cannot be administered enroute.
 2. Is not used for casualties with chest injuries if the atmospheric pressure cannot be controlled.
- C. Use of transportation vehicles.
 1. Navy's organized use of the helicopter has saved many lives.
 - a. Was used during the Korean War.
 - b. Was used during U.S.S. Bennington disaster.
 2. Wildly speeding ambulances create conditions not conducive to good casualty care.
 - a. May intensify pain, compound injuries, and aggravate shock.
 - b. Increase fear and anxiety which may be harmful to the casualty.

APPLICATION

- I. Demonstration given by the instructor.
 - A. Use trainees as examples of casualties.
 - B. Illustrate use of Stokes stretcher, Non-Traumatic Carrier, and Army litter.
 - C. Demonstrate how to properly place and hold casualties for transportation.
 - D. Illustrate how litters can be improvised from available materials.
 - E. Review carry procedures given in the Handbook of the Hospital Corps.
- II. Procedures practiced by the trainees as directed by the instructor.
 - A. Practice procedures for lifting casualties.
 - B. Practice the use of special positions for various injuries.

SUMMARY

- I. Procedures used and precautions followed for the initial transportation of casualties.
 - A. Use caution in moving a casualty onto the litter at the site of the accident.
 - B. Be aware of and use the special positions used for specific wounds.
 - C. Designate someone to remain in constant attendance during transportation to perform needed duties.

LESSON PLAN 18

- II. Concepts and methods of further evacuation of casualties.
 - A. Need of immediate hospitalization for the casualty was revealed by statistics of World War II.
 - B. Use of high altitude evacuation is contraindicated for casualties with head or chest injuries.
 - C. Use of transportation vehicles.

LESSON PLAN 19

TITLE: EXPOSURE TO THE ELEMENTS

OBJECTIVES

- I. To develop the trainee's understanding of the problems created by exposure to the elements.
- II. To acquaint the trainee with the first aid procedures employed in the treatment of heat casualties.
- III. To acquaint the trainee with the first aid procedures employed in the treatment of cold casualties.

TRAINING AIDS

Training films:

- A. First Aid for Heat Stroke and Heat Exhaustion (MN-8186). Color, sound, 20 minutes.
- B. Prevention of Cold Injuries (TF-82524). Black and white, sound, 20 minutes.

REFERENCES

- I. Emergency War Surgery, NATO Handbook (NavMed P-5059).
- II. Mackie, T. T.; Hunter, G. W.; and Worth, C. B. A Manual of Tropical Medicine, ed. 2. Philadelphia, W. B. Saunders Co.
- III. Combat and Field Medicine Practice (NavPers 10819A).
- IV. Handbook of the Hospital Corps, United States Navy (NavMed P-5004).
- V. American National Red Cross First Aid Textbook, ed. 4. Philadelphia, W. B. Saunders Co.
- VI. Washburn, B. Frostbite. Am. Alpine J. 13:1-26, June 1962.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.

III. Explain the importance of the subject.

- A. In order to prevent exposure injury and to reduce mortality and morbidity resulting from exposure in a mass casualty situation, all personnel concerned with the care of mass casualties should be familiar with the symptoms and treatment of the conditions caused by exposure.

PRESENTATION

- I. Understanding the problems created by exposure to the elements.
 - A. The breakdown of those physiologic processes which enable man to maintain a normal body temperature produces optimum conditions for disease or injury.
 - B. Exposure to cold may accelerate the loss of needed body heat and cause trauma or worsen the condition of casualties with exposure wounds or injuries.
 - C. Heat or a combination of heat and physical exertion may slow the rate at which surplus heat is dissipated from the body and result in injury.
- II. First aid procedures employed in the treatment of heat casualties.
 - A. Understand the physiologic response of exposure to excessive heat.
 1. Increased heat dissipation through physical mechanisms.
 - a. Vasodilation.
 - b. Accelerated pulse and respiration.
 - c. Profuse perspiration.
 - d. Reduction in capacity for muscular work.
 - B. Recognize traumatic conditions of heat exhaustion (heat prostration, heat syncope).
 1. Is characterized by prostration and varying degrees of circulatory collapse accompanied by little if any rise in body temperature.
 2. Dehydration from loss of salt and water from the body causes
 - a. Lowered blood volume.
 - b. Circulatory collapse.
 - C. Know symptoms--headache; unusual tiredness; dizziness; dim or disordered vision; shallow respiration; cramps; nausea; vomiting; marked pallor; cold, clammy skin; low blood pressure; weak, rapid pulse.
 - D. Make diagnosis promptly because unconsciousness and death follow continued exposure.
 - E. Initiate first aid treatment for heat exhaustion.
 1. Avoid further exposure and activity.
 - a. Remove casualty to a cool area.
 - b. Treat casualty for shock.
 2. Correct dehydration and salt deficiency.
 - a. Give saline solution by mouth if casualty is conscious.
 - (1) Use 1/2 teaspoonful of salt per quart of liquid.
 - (2) Give every 15 minutes for three or four doses.
 - b. Infuse physiologic saline solution intravenously in severe cases.

3. Encourage circulation of the blood.
 - a. Elevate the feet.
 - b. Move or massage the extremities.
 - c. If temperature is subnormal
 - (1) Wrap casualty loosely in blankets.
 - (2) Apply a hot water bottle to the feet.
4. Give cardiac stimulants if necessary.
- F. Recognize traumatic conditions of heatstroke (heat pyrexia, sunstroke, heat hyperpyrexia, thermic fever, sun traumatism).
 1. Is characterized by high fever, circulatory collapse, and, in severe cases, coma, convulsions, and death.
 2. Causes profound disturbance or failure of the heat-regulating mechanism of the body.
- G. Know symptoms.
 1. Advance warning signals--absence of sweating, frequent desire to urinate, weakness, lassitude, headache, dizziness, loss of appetite, nausea, increase in body temperature and pulse rate, muscle cramps.
 2. Early stages--contracted pupils; vomiting; muscle twitch; anxiety or mental derangement; hot, red, dry skin; full, regular pulse; normal blood pressure; elevated body temperature (105° to 110° F.); delirium, progressing to coma; convulsions.
 3. Later stages--dilated pupils; shallow, irregular breathing; weak, irregular pulse; below-normal blood pressure.
- H. Initiate first aid treatment for heatstroke.
 1. Reduce the body temperature as rapidly as possible.
 - a. Remove clothing.
 - b. Place in cold water, pour cold water over body, or rub with ice.
 - c. Massage extremities toward the heart to assist circulation.
 - d. Take rectal temperature every 10 minutes.
 - e. Give cold salt water enemas (1,500 to 3,000 cc.) if temperature does not readily decrease.
 - f. Remove to bed and cover lightly when temperature drops to 102° to 103° F.
 2. Maintain normal body temperature.
 - a. Avoid excessive cooling.
 - b. Make certain that temperature readings are uninfluenced by water or environment.
 3. Infuse physiologic saline solution intravenously if dehydrated.
 4. Give cool drinks when consciousness returns.
 5. For milder cases, cool with cold sponges, wet packs, and fanning.
 6. Take precaution against relapses.
 - a. Maintain bed rest.
 - b. Protect against even moderately high temperatures (casualties often remain abnormally susceptible to heat).
 - c. Evacuate if possible.

III. First aid procedures employed in the treatment of cold casualties.

- A. Understand the physiologic response of exposure to excessive cold.
 1. Increased heat conservation and production through physical mechanisms.
 - a. Cutaneous vasoconstriction to prevent heat loss at surface.
 - b. Muscular contraction to produce more heat.
 - (1) Shivering.
 - (2) Gooseflesh.
 - c. Increased metabolic activity.
- B. Recognize traumatic conditions of cold exposure.
 1. Look for initial peripheral vasoconstriction.
 - a. Cooling of skin surface.
 - b. Reduced or halted blood circulation.
 - c. Oxygen starvation of tissues.
 2. Remember that the degree and duration of vasoconstriction determine the amount of damage to the tissues involved.
- C. Understand types of injury.
 1. Chilblains.
 - a. Result from exposure to temperatures above freezing associated with high humidity.
 - b. Frequently affect the hands.
 2. Immersion foot.
 - a. Results from exposure to water at temperatures usually below 50° F.
 - (1) Usually in excess of 12 hours.
 - (2) Immersion in sea water at 50° F. may cause death in less than 1 hour.
 - b. May occur in hot, damp tropical environment.
 3. Trenchfoot.
 - a. Results from prolonged exposure to cold at temperatures ranging from just above freezing to 50° F.
 - (1) Often in a damp environment.
 - (2) Usually in connection with immobilized and dependent extremities.
 - b. May also occur in the hands.
 4. Frostbite.
 - a. Crystallization of tissue fluids in the skin or subcutaneous tissues after exposure to temperatures of 32° F. or lower, and low relative humidity.
 - b. Exposure time may range from 1 to 20 hours.
 - (1) Average duration is 10 hours.
 - (2) Severe injury may be instantaneous in very low temperatures.
- D. Know symptoms--uncomfortable coldness, followed by numbness; stinging, tingling, aching, sensations; cramping pain; lack of feeling in affected part; flushed skin, changing to waxy white.
- E. Recognize the degree of severity (manifested after rewarming).
 1. First-degree cold injury.

- a. Hyperemia.
 - (1) Begins as mottled blue or purple skin.
 - (2) Becomes red, hot, and dry.
- b. Edema.
 - (1) Begins within 3 hours.
 - (2) Persists 10 days or more if casualty is ambulatory.
 - (3) Disappears in less than 5 days with bed rest.
- c. Desquamation of superficial layers of skin.
 - (1) Begins 5 to 10 days after injury.
 - (2) May continue for as long as a month.
- d. Cyanosis of the digits.
2. Second-degree cold injury.
 - a. Hyperemia and edema.
 - b. Superficial vesicles form.
 - (1) Within 12 to 24 hours of rewarming.
 - (2) On the great toe and heel.
 - (3) On the dorsum of one or more fingers.
 - c. Eschars form from drying vesicles.
 - (1) Limit motion of the parts.
 - (2) Desquamate, revealing easily traumatized skin.
 - d. Pain persists for 3 to 20 days.
 - e. Hyperhydrosis appears in 2 to 3 weeks.
3. Third-degree cold injury.
 - a. Involves full skin thickness.
 - b. Extends into subcutaneous tissue.
 - c. Vesicles dry to form eschars.
 - d. Edema, usually disappearing within 6 days.
 - e. Eschars desquamate, ulcer remaining epithelializes.
 - f. Pain.
 - (1) Begins within 5 to 17 days.
 - (2) Lasts from 2 to 5 weeks.
 - g. Hyperhydrosis and cyanosis appear within 4 to 10 weeks.
 - h. Average healing time is 68 days.
4. Fourth-degree cold injury.
 - a. Destruction of entire thickness of the part.
 - (1) Vesicles are present.
 - (2) Edema may involve the entire extremity.
 - b. Loss of all injured tissues.
 - (1) Process takes about 20 days.
 - (a) Tissues become black, dry, and shriveled or mummified.
 - (b) Dry or moist gangrene ensues.
 - (2) Line of demarcation appears in about 36 days and extends to bone 60 to 80 days after injury.
- F. Initiate first aid treatment for cold exposure.
 1. Treat all casualties with involvement of the lower extremities as litter cases.
 2. Remove constricting clothing.
 - a. Thaw boots and clothing frozen to the body by immersion in warm water.
 - b. Manipulate gently to lessen damage.

3. Rewarm frozen parts rapidly.
 - a. Immerse in water at 90° to 104° F.
 - b. Place warm hands on injured part.
 - c. Expose injured part to warm air.
4. Maintain general body warmth.
5. Encourage sleep and rest.
6. Combat infection.
 - a. Give booster dose of tetanus toxoid.
 - b. Also give 600,000 units of procaine penicillin three or four times daily.
7. Cover large vesicles or bullae with loose, dry dressings.
8. Prohibit smoking.
9. Evacuate for definitive care.

APPLICATION

Conduct class discussion.

SUMMARY

- I. Understanding the problems created by exposure to the elements.
 - A. The breakdown of those physiologic processes which enable man to maintain a normal body temperature produces optimum conditions for disease or injury.
 - B. Exposure to cold may accelerate the loss of needed body heat and cause trauma or worsen the condition of casualties with exposure wounds or injuries.
 - C. Heat or a combination of heat and physical exertion may slow the rate at which surplus heat is dissipated from the body and result in injury.
- II. First aid procedures employed in the treatment of heat casualties.
 - A. Understand the physiologic response of exposure to excessive heat.
 - B. Recognize traumatic conditions of heat exhaustion (heat prostration, heat syncope).
 - C. Know symptoms--headache; unusual tiredness; dizziness, dim or disordered vision; shallow respiration; cramps, nausea; vomiting; marked pallor; cold, clammy skin; low blood pressure; small, weak, rapid pulse.
 - D. Make diagnosis promptly because unconsciousness and death follow continued exposure.
 - E. Initiate first aid treatment for heat exhaustion.
 - F. Recognize traumatic conditions of heatstroke (heat pyrexia, sunstroke, heat hyperpyrexia, thermic fever, sun traumatism).
 - G. Know symptoms.
 - H. Initiate first aid treatment for heatstroke.
- III. First aid procedures employed in the treatment of cold casualties.
 - A. Understand the physiologic response of exposure to excessive cold.
 - B. Recognize traumatic conditions of cold exposure.

LESSON PLAN 19

- C. Understand types of injury.
- D. Know symptoms--uncomfortable coldness, followed by numbness; stinging, tingling, aching sensations; cramping pain; lack of feeling in affected part; flushed skin, changing to waxy white.
- E. Recognize the degree of severity (manifested after rewarming).
- F. Initiate first aid treatment for cold exposure.

LESSON PLAN 20

TITLE: EMERGENCY CHILDBIRTH

OBJECTIVES

- I. To instruct the trainee to recognize signs of imminent childbirth.
- II. To instruct the trainee in the events of normal delivery.
- III. To instruct the trainee in postdelivery procedures.

TRAINING AID

Training film: Emergency Childbirth (MN-9465). Color, sound, 21 minutes.

REFERENCE

White, G. J. Emergency Childbirth. Franklin Park, Ill., Police Training Foundation, 1958.

INTRODUCTION

- I. Introduce yourself.
- II. State objectives of the lesson.
- III. Explain the importance of the subject.
 - A. Many childbirths will be provoked by mass casualty situations.
 - B. Surviving medical personnel will be employed elsewhere.
 - C. Normal deliveries will be managed by paramedical personnel.
 - D. Complicated deliveries must receive expert medical attention.

PRESENTATION

- I. Signs of imminent childbirth.
 - A. Strong contractions (labor pains) are evident.
 - B. Intervals between contractions are 2 minutes or less.
 - C. Visual examination reveals the baby in the birth canal.
 - 1. To make examination, place mother in the proper position. (amplify).
 - 2. Wait for contraction to take place, then look for sign of baby at vaginal opening.
 - 3. If there is no sign of the baby, or if there is any part other than the head visible, TAKE MOTHER TO HOSPITAL IMMEDIATELY.
 - 4. When the head is visible, delivery time has arrived.

II. Events of normal delivery.

A. Preparation for delivery.

1. Be calm and reassuring when informing mother of a home delivery. Emphasize that all is fine and that she must remain relaxed.
2. Have father attend mother, if at home. Have him sit at her head and, while carrying on a reassuring conversation, hold her hand and stroke her hair.
3. Put on sterile gloves, if available. If not, wash hands thoroughly with soap and water.
4. Talk to mother in a calm, reassuring voice. Tell her to relax between contractions; that all is going well.
5. Spread sterile towel under buttocks and another on abdomen, being careful not to contaminate hands.
6. Spread sterile blanket to receive baby, placing it at a safe distance so that it will not be contaminated by fecal discharge.
7. Place obstetric pack close at hand.

B. Steps in delivery.

1. Place left hand (if right handed) in correct position against perineum below vulva, superior to anal area.
2. Use firm but diminishing pressure as head presents itself, so as to prevent explosive delivery and unnecessary laceration and tearing of mother.
3. Cradle the head, but do not interfere with its movements or rotation. Avoid contact with discharge on bed.
4. LOOSEN cord if it is around neck, but do not untangle now.
5. Aspirate mouth and nostrils with aspirator. ALWAYS COMPRESS BULB BEFORE INSERTION. Do not insert aspirator into throat.
6. Untangle cord when all of baby has emerged. Continue aspiration until baby cries lustily and breathes without gurgles. If not breathing, snap your fingers on soles of the feet and prepare for mouth-to-nose-mouth resuscitation.
7. Place baby near mother's buttocks in area free of discharge. Continue aspiration, remembering to COMPRESS BULB OF ASPIRATOR BEFORE INSERTION. Keep child warmly covered.

III. Postdelivery procedures.

A. Tying off umbilical cord.

1. Wait until the full, blue, and perceptible pulsed cord becomes limp, pale and pulseless, then make ties with sterile tapes from OB pack.
2. Make first tie-off halfway between baby and mother. PULL TAPE TIGHT, BUT DO NOT JERK TO TIGHTEN. Place another tape about 3 inches from first and make second tie-off. Secure each tape with several square knots.
3. Cut cord with sterile scissors halfway between ties, holding ends so that they do not drop into discharged matter. Place cord protruding from mother on the abdominal towel.

4. Carefully place baby to mother's breast to suckle. Lay child obliquely over mother's chest with face to nipple and caution mother not to obstruct child's breathing and to hold child firmly. Suckling helps to expel placenta and slows bleeding which accompanies placental delivery.
- B. Delivery of placenta.
 1. Occurs within 15 minutes after cord is cut.
 2. Watch for signs of placenta delivery.
 - a. Cord swells again and lengthens.
 - b. Bleeding from vagina begins.
 - c. If placenta delivery does not begin, take mother to hospital immediately.
 3. Have mother bear down to expel placenta. DO NOT PULL ON CORD OR DEPRESS THE MOTHER'S ABDOMEN.
 4. Time free bleeding period which accompanies placenta expulsion.
 - a. Should stop in about 5 minutes.
 - b. If free bleeding continues, take mother to hospital immediately.
 5. Wrap placenta in towel and reserve it for later examination by physician at hospital.
 6. Clean up vaginal area. WIPE AWAY FROM opening and tears (tears will be repaired later by physician).
 7. Cover tears with sterile gauze and cover the vulva with sanitary pads.
 8. Lower mother's legs and keep them close together. This will aid her comfort and help control bleeding from tears.
 9. Identify baby by making bracelet of adhesive tape with full name of mother, time, and date of delivery.
 10. Transport mother and baby to hospital for further treatment.

APPLICATION

Conduct class discussion.

SUMMARY

- I. Emphasize that childbirth is a normal function.
 - A. That labor and delivery are normal functions which nature tends to complete successfully.
 - B. That 95 percent of births are normal.
 - C. That the main purpose of an attendant is to assist nature.
- II. Review essential points of objectives.
 - A. Conduct preliminary examination.
 - B. Maintain calm attitude; be reassuring.
 - C. Cradle baby's head during delivery.
 - D. Use aspirator correctly in aspirating technique.
 - E. Tie off and cut umbilical cord properly.
 - F. Attend at expulsion of placenta.
 - G. Complete cleanup of mother.
 - H. Attach identification bracelet to baby.
 - I. Transport mother and baby to hospital for further treatment.

